ORDER NO.PHAMOS0507026A3

Service Manual

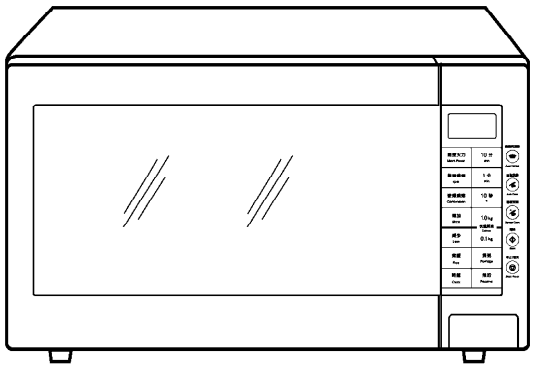
Microwave Oven

Simplified

NN-K584SF / NN-K575MF / NN-S575MF / NN-S565JF

WTT(Taiwan)

Please file and use this manual together with the service manual for Model No. / NN-G463/S443/S423/S413/413, Order No. SIMMC 0303011C7.



SPECIFICATIONS

Specification

Models		K584SF	K575MF	S575MF	S565JF
Power Source:		110V AC Single Phase,60Hz			
Power Requirement:	Microwave	1450W	1450W	1450W	1450W
	Heater	1050W	1050W	—	—
Output:	Microwave	1100W	1100W	1100W	1100W
	Heater	1000W	1000W	—	—
Microwave Frequency:		2450MHz			
Timer:		99 Min.99Sec			
Outside Dimensions(H) x (D) x (W):		304mm x 408mm x 510mm	304mm x 415mm x 510mm		304mm x 380mm x 510mm
Oven Cavity Dimensions(H) x (D) x (W):		217mm x 352mm x 359mm			
Weight:		13kg	12.5kg	12.5kg	11.5kg
PbF		This product with PbF			
Specifications subject to change without notice.					

© 2005 Panasonic Home Appliances Microwave Oven (Shanghai) Co., Ltd. / All rights reserved. Unauthorized copying and distribution is a violation of law.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
3. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
4. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

This service manual covers products for following markets.
When troubleshooting or replacing parts, please refer to the country/area identifications shown below for your applicable product specification.

WTT ..... For Taiwan

CAUTION

About lead free solder (PbF)

Distinction of PbF PCB: PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:
- Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40˚C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 370 ± 10˚C.
- Pb free solder will tend to splash when heated too high (about 600˚C).

Panasonic®

DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)

INVERTER WARNING

This Inverter board looks like a regular PCB. However, this PCB drives the magnetron tube with extremely high voltage and high current. NEW H.V.

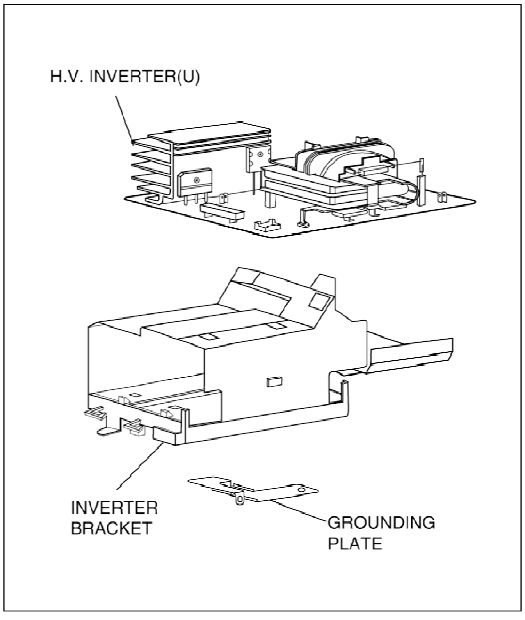
IT HAS:

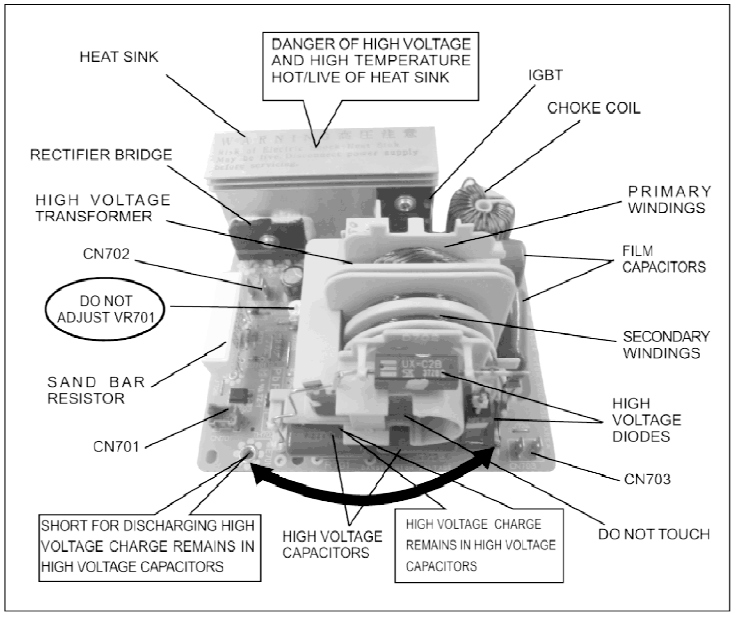
1. **Very high voltage and high current circuits.**
   It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.
2. **Aluminum heat sink that is energized with very high voltage and high heat energy.**
3. **Very high voltage which may remain in circuitry even when oven is off. High voltage charge may remain in the capacitors on the board.**

DO NOT:

* 1. **Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage charge may remain in circuits.**
* 2. **Do not touch aluminum heat sink because it is energized with very high voltage and is also very hot in high heat energy.**
* 3. **Do not try to adjust or tamper with preset control on the Inverter board because it is very dangerous to adjust without proper test equipment.**
* 4. **Do not test oven while Inverter grounding plate or screws are loose. It is very dangerous to operate H.V. Inverter Circuit (U) with loose mounting screws or if improperly grounded.**

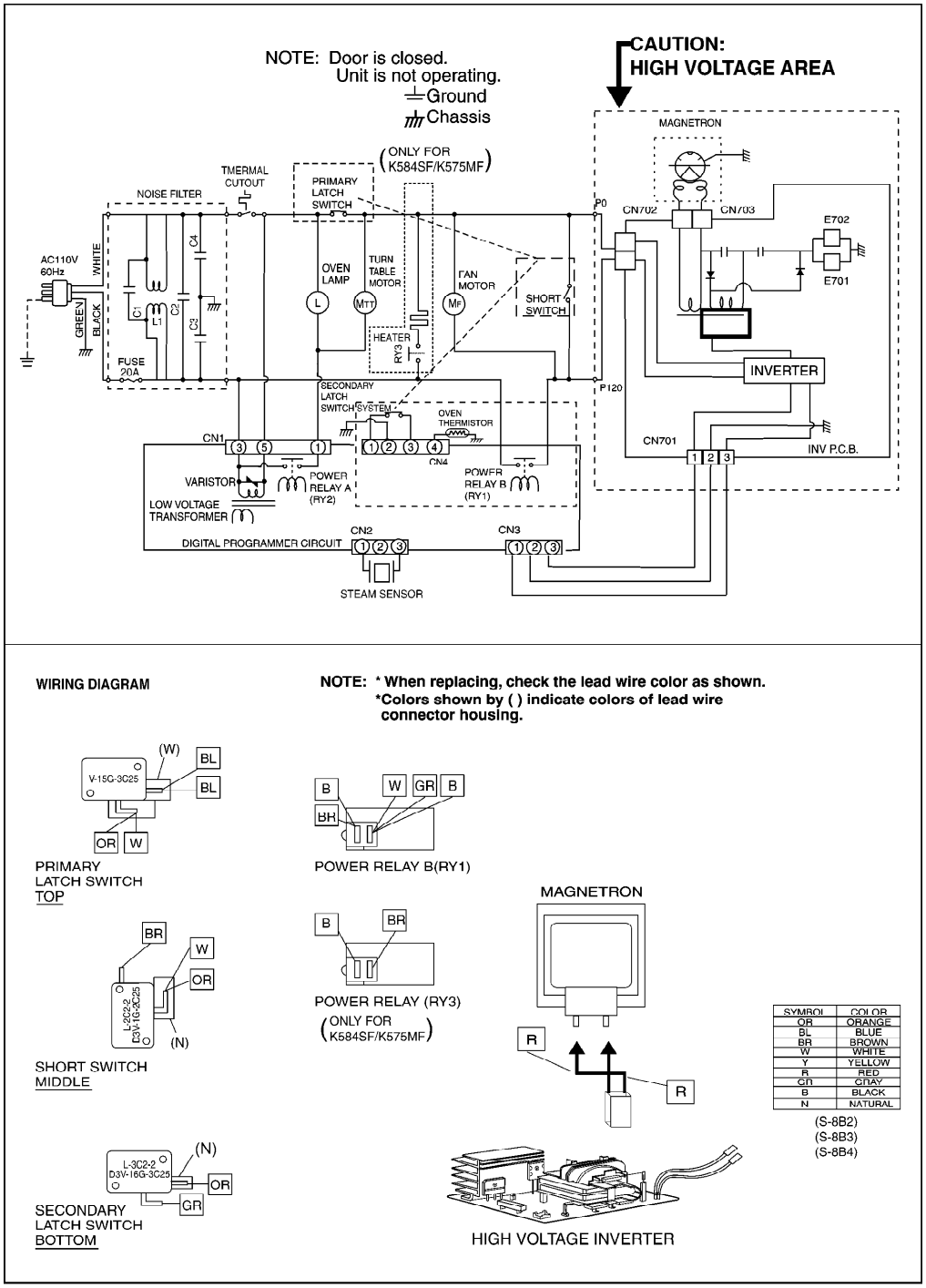
INVERTER POWER SUPPLY



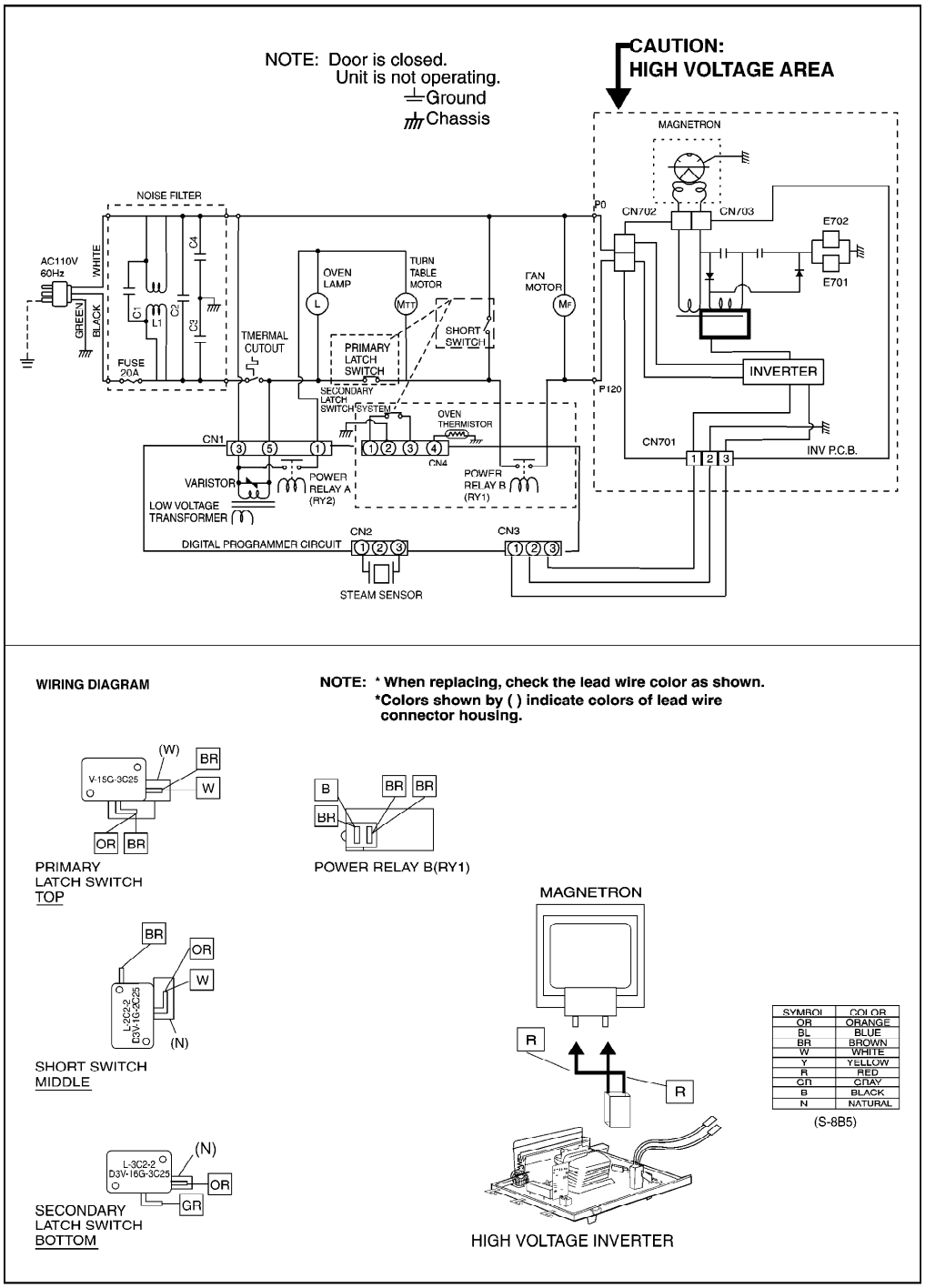


1. SCHEMATIC DIAGRAM

1.1. (NN-K584SF/K575MF/S575MF)



1.2. (NN-S565JF)



WIRING DIAGRAM

NOTE: * When replacing, check the lead wire color as shown.
*Colors shown by ( ) indicate colors of lead wire connector housing.

PRIMARY
LATCH SWITCH
TOP

POWER RELAY B(RY1)

SHORT SWITCH
MIDDLE

SECONDARY
LATCH SWITCH
BOTTOM

HIGH VOLTAGE INVERTER

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GY	GRAY
B	BLACK
N	NATURAL

(S-8B5)

2. MEASUREMENTS AND ADJUSTMENTS

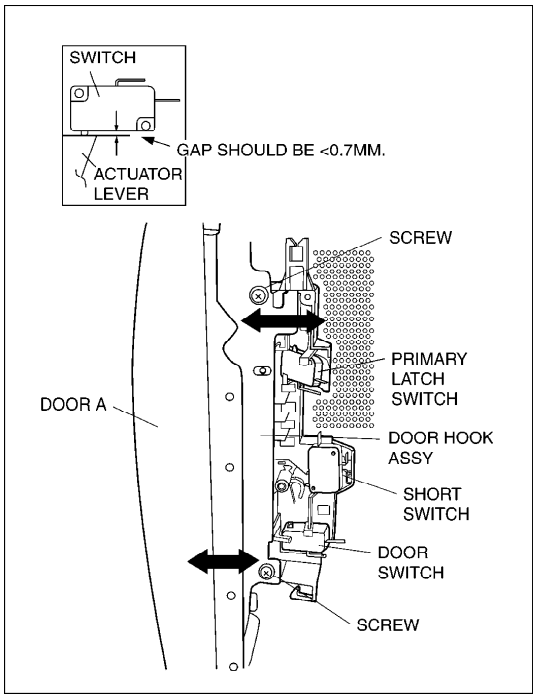
2.1. Adjustment of primary latch switch, door switch and short switch.

1. Mount the Primary latch switch, the door switch and the short switch to the door hook assembly as shown in ILL.

   NOTE:

No specific individual adjustments during installation of the Primary latch switch, door switch or short switch to the door hook are required.

2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrows in the illustration, so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
3. Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the component test procedures.



2.2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However,due to the complexity of IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.

Necessary Equipment:

***1 liter beaker *Glass thermometer / *Wrist watch or stopwatch**

NOTE:

Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time

as accurately as possible.

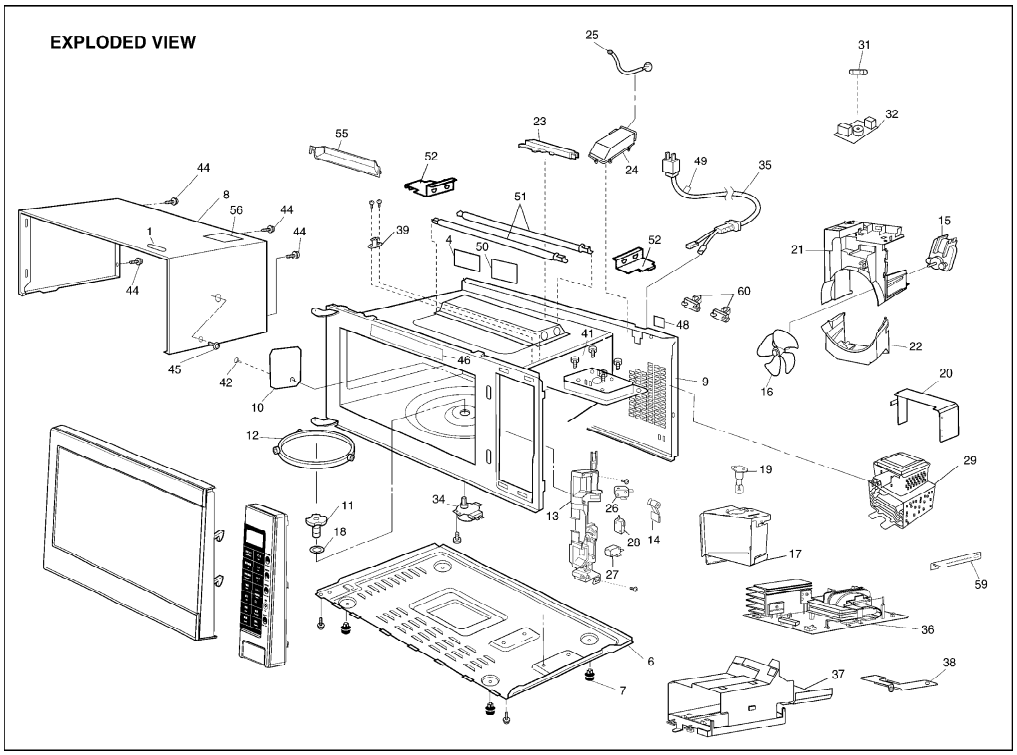
1. Fill the beaker with exactly one liter of tap water.Stir the water using the thermometer and record the water's temperature. (recorded as T1).
2. Place the beaker on the center of glass tray. / Set the oven for High power and heat it for exactly one minute.
3. Stir the water again and read the temperature of the water. (recorded as T2).
4. The normal temperature rise at High power level for each model, is as shown in table.

TABLE (1L-1min.test)

RATED OUTPUT	TEMPERATURE RISE
1100W(IEC705-88)	Min.16.9°F (9.4°C)
1200W(IEC705-88)	Min.18.5°F (10.3°C)

3. EXPLODED VIEW AND PARTS LIST

3.1. EXPLODED VIEW



3.2. PARTS LIST

NOTE:

1. When ordering replacement part(s), please use part number(s) shown in this part list.
   Do not use description of the part.
2. Important safety notice:
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacture's specified parts.

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
1		F00066S10WT	CAUTION LABEL	1	
4		F00078B20SWT	NAME PLATE	1	K584SF
4		F00078B30SWT	NAME PLATE	1	K575MF
4		F00078B40SWT	NAME PLATE	1	S575MF
4		F00078B50NWT	NAME PLATE	1	S565JF
6		F10016M60AP	BASE	1	EXCEPT S565JF
6		F10015Q00AP	BASE	1	S565JF
7		F10084T00AP	RUBBER FOOT	4	
8		F110D6W70SXP	CABINET BODY	1	K584SF, K575MF
8		F110D6W80SXP	CABINET BODY	1	S575MF
8		F110D6W80NXP	CABINET BODY	1	S565JF
9	⚠	F200A8B20WT	OVEN	1	K584SF
9	⚠	F200A8B30SWT	OVEN	1	K575MF
9	⚠	F200A8B50SWT	OVEN	1	S575MF, S565JF
10		F20555Q00AP	COVER	1	
11		F21315G10XN	PULLY SHAFT	1	
12		F290D5Q00AP	ROLLER RING (U)	1	
13	⚠	F30205Q00AP	DOOR HOOK	1	
14		F31365Q00AP	HOOK LEVER A	1	
15		F400A5G60AP	FAN MOTOR	1	
16		F40085G10XN	FAN BLADE	1	
17		F40255Q00AP	AIR GUIDE A	1	
18		F2177-F80	WASHER	1	K584SF , K575MF
19		F612E5G40AP	INCANDESCENT LAMP (U)	1	
20		F40425Q00AP	AIR GUIDE F	1	
21		F41445Q00AP	UPPER ORIFICE	1	
22		F42095Q00AP	LOWER ORIFICE	1	S565JF
23		F64505Q00AP	SENSOR COVER B	1	
24		F65434W00AP	SENSOR COVER C	1	
25		A607S4T00AP	STEAM SENSOR	1	
26	⚠	J61424T00AP	MICRO SWITCH	1	(PRIMARY LATCH SWITCH) (V-15G-3C25)
27	⚠	J61414T00AP	MICRO SWITCH	1	(SECONDARY LATCH SWITCH) (D3V-16G-3C25)
28	⚠	J61784T00AP	MICRO SWITCH	1	(SHORT SWITCH) (D3V-1G-2C25)

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
29	⚠	2M261-M32J	MAGNETRON	1	
31	⚠	F62307A00AP	FUSE	1	20A
32		J692Y4T00CPR	NOISE FILTER (U)	1	
34		F63265G60AP	TURNTABLE MOTOR	1	
35	⚠	F900C8B20WT	AC CORD W/PLUG	1	
36		F606Y6G00AP	H.V.INVERTER (U)	1	EXCEPT S565JF
36		F606Y5X00CP	H.V.INVERTER (U)	1	S565JF
37		F65856M60AP	INVERTER BRACKET	1	EXCEPT S565JF
37		F65855Q00AP	INVERTER BRACKET	1	S565JF
38		F66626H60AP	GROUNDING PLATE	1	EXCEPT S565JF
38		F66625Q00AP	GROUNDING PLATE	1	S565JF
39		F61455G60XN	THERMAL CUTOUT	1	
41		XTWFA4+12T	SCREW	4	FOR MAGNETRON
42		XTTFA4+6BN	SCREW	1	FOR COVER
44		XTWFA4+12D	SCREW	4	FOR CABINET BODY
45		XTCAFA4+ 12AFS	SCREW	1	FOR CABINET BODY SIDE (EXCEPT S565JF)
45		XTCAFA4+ 12AFN	SCREW	1	FOR CABINET BODY SIDE (S565JF)
46		F03348B20WT	MENU LABEL	1	K584SF
46		F03348B30WT	MENU LABEL	1	K575MF
46		F03348B40WT	MENU LABEL	1	S575MF
46		F03345Q00WT	MENU LABEL	1	S565JF
48		F0005-6S10	EARTH LABEL	1	
49		F02395G00WN	CORD CAUTION LABEL	1	
50		F02628B20SWT	SCHEMATIC DIAGRAM	1	K584SF
50		F02628B30SWT	SCHEMATIC DIAGRAM	1	K575MF
50		F02628B40SWT	SCHEMATIC DIAGRAM	1	S575MF
50		F02628B50NWT	SCHEMATIC DIAGRAM	1	S565JF
51		F630G8B20WT	HEATER (AU)	2	K584SF, K575MF
52		F64605R00BP	HEATER MOUNTING PLATE	2	K584SF, K575MF
55		F40245R00AP	EXHAUST GUIDE A	1	K584SF, K575MF
56		F01506W50XP	NO TOUCHING LABEL	1	K584SF, K575MF
59		F20345Q00CP	REINFORCE BRACKET	1	
60		F11404J60XN	STOPPER	2	

3.3. H.V.INVERTER BOARD MAIN PARTS LIST

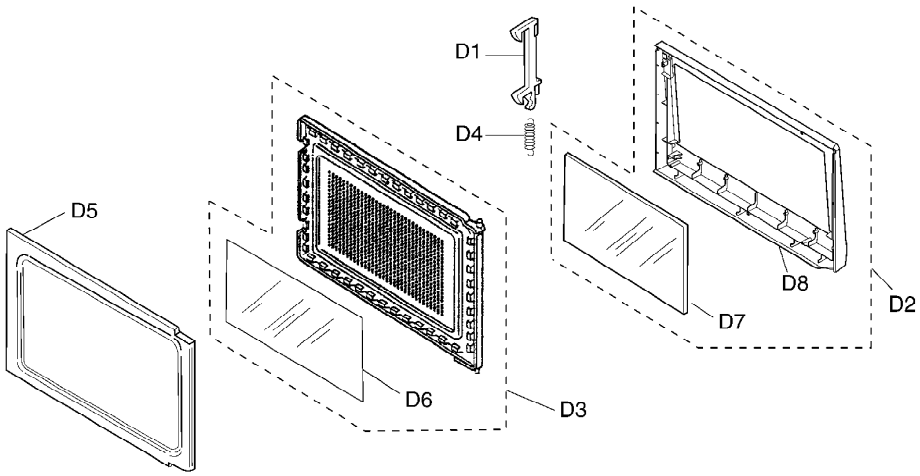
3.3.1. (F606Y6G00AP)

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
C707		ECWH30822JUA	CAPACITOR	1	8200PF, 3000VDC
C706		ECWH30562JUA	CAPACITOR	1	5600PF, 3000VDC
D701, D702	⚠	B0FBAZ000001	DIODE SI	2	
DB701		B0FBBS000001	BRIDGE DIODE	1	20A, 600V
L701		F50206G00AP	CHOKE COIL	1	
Q701		B1JAGV000008	TRANSISTOR SI	1	900V
T701		A609A6G00AP	H.V. TRANSFORMER	1	

3.3.2. (F606Y5X00AP)

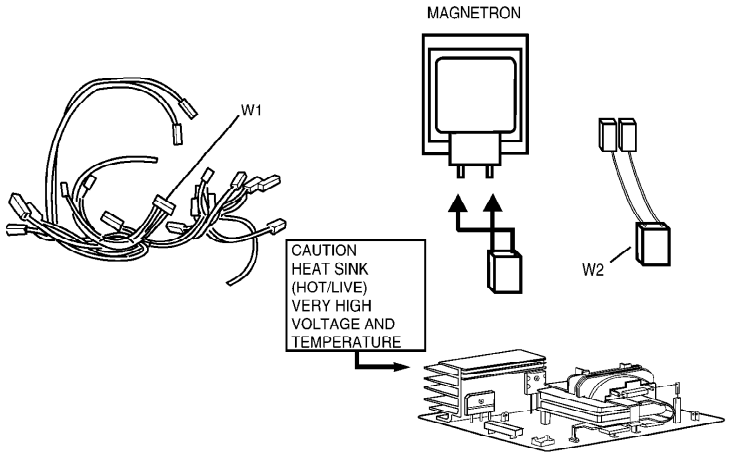
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
		F607D5X00AP	D.P.C. CIRCUIT (KU)	1	
C703		ECWH30822JUA	CAPACITOR	1	8200PF, 3000VDC
C704		ECWH30562JUA	CAPACITOR	1	5600PF, 3000VDC
D701, D702	⚠	B0FBAZ000001	DIODE SI	2	
DB701		AESTRS2006M	BRIDGE DIODE	1	20A, 600V
L701		F50206G00AP	CHOKE COIL	1	
Q701		B1JAGV000008	TRANSISTOR SI	1	900V
T701		F609A-1941	H.V. TRANSFORMER	1	
CT701		F66904V00XN	CURRENT TRANSFORMER	1	

3.4. DOOR ASSEMBLY



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
D1		F30185Q00AP	DOOR KEY A	1	
D2	⚠	F302A6W50SXP	DOOR A (U)	1	K584SF
D2	⚠	F302A6W70SXP	DOOR A (U)	1	K575MF, S575MF
D3	⚠	F302K5Q00AP	DOOR E (U)	1	
D4		F30215G10XN	DOOR KEY SPRING	1	
D5	⚠	F30855Q00AP	DOOR C	1	
D6	⚠	F31456V60XP	DOOR SCREEN A	1	EXCEPT S565JF
D6	⚠	F31454T00AP	DOOR SCREEN A	1	S565JF
D7		F31465Q00BAP	DOOR SCREEN B	1	S565JF
D8	⚠	F30015Q00NBP	DOOR A	1	S565JF

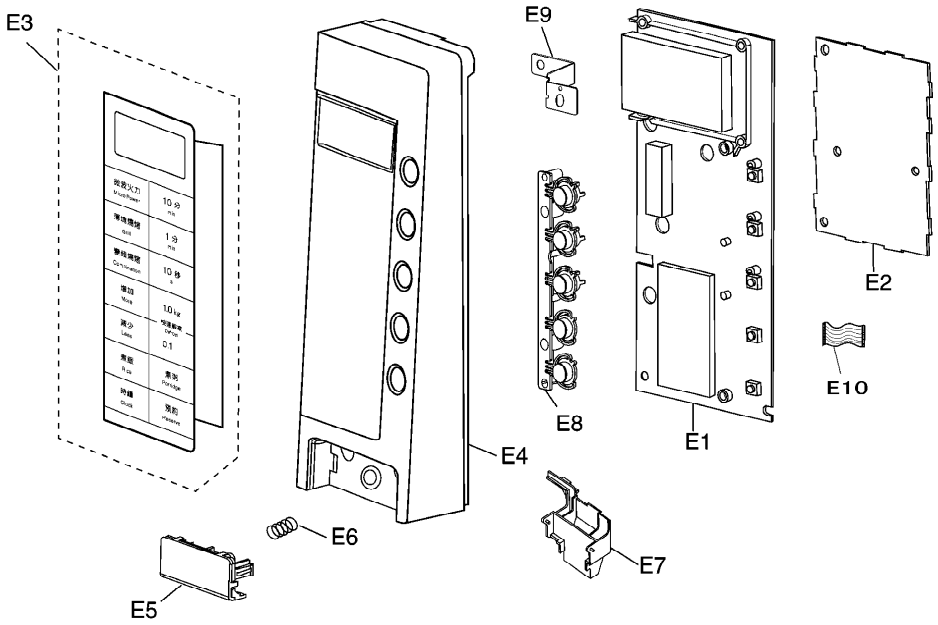
3.5. WIRING MATERIALS



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
W1		F030A8B20WT	LEAD WIRE HARNESS	1	K584SF, K575MF
W1		F030A8B40WT	LEAD WIRE HARNESS	1	S575MF
W1		F030A5Q00CP	LEAD WIRE HARNESS	1	S565JF
W2		F030E5Q00AP	H.V.LEAD WIRE	1	

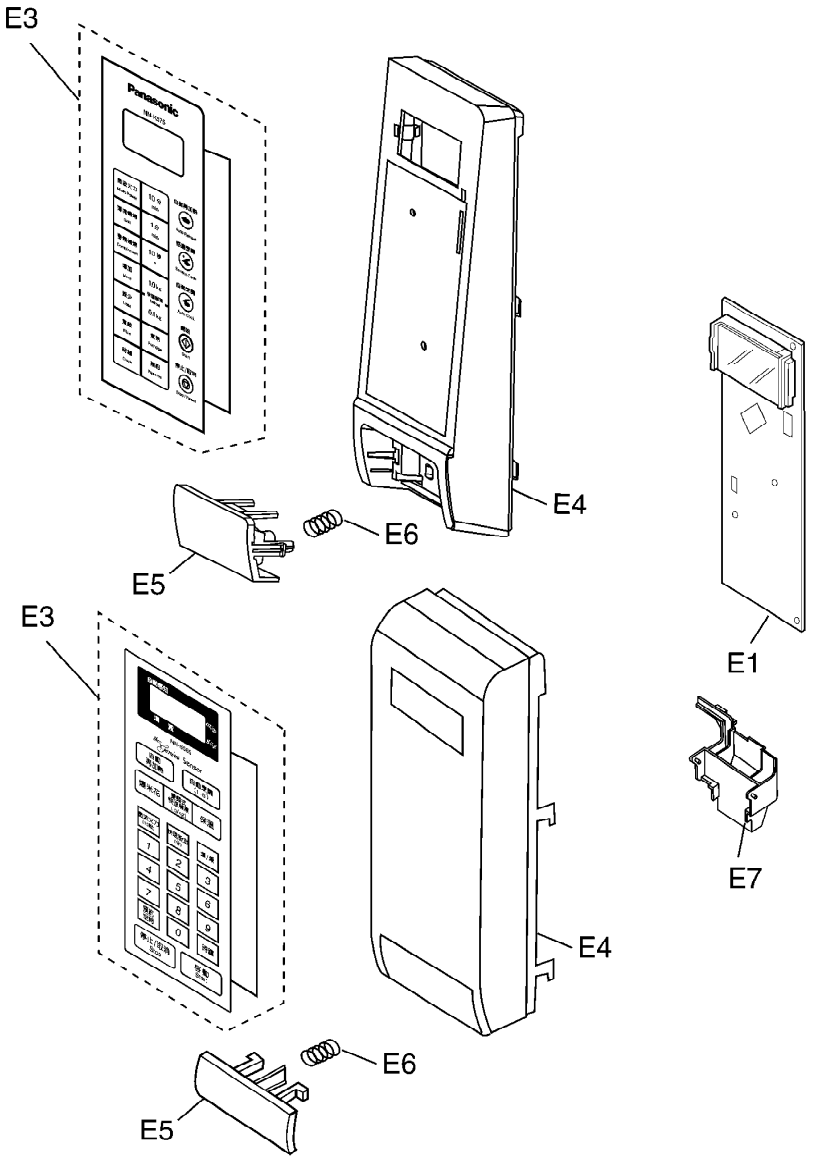
3.6. ESCUTCHEON BASE ASSEMBLY

3.6.1. NN-K584SF



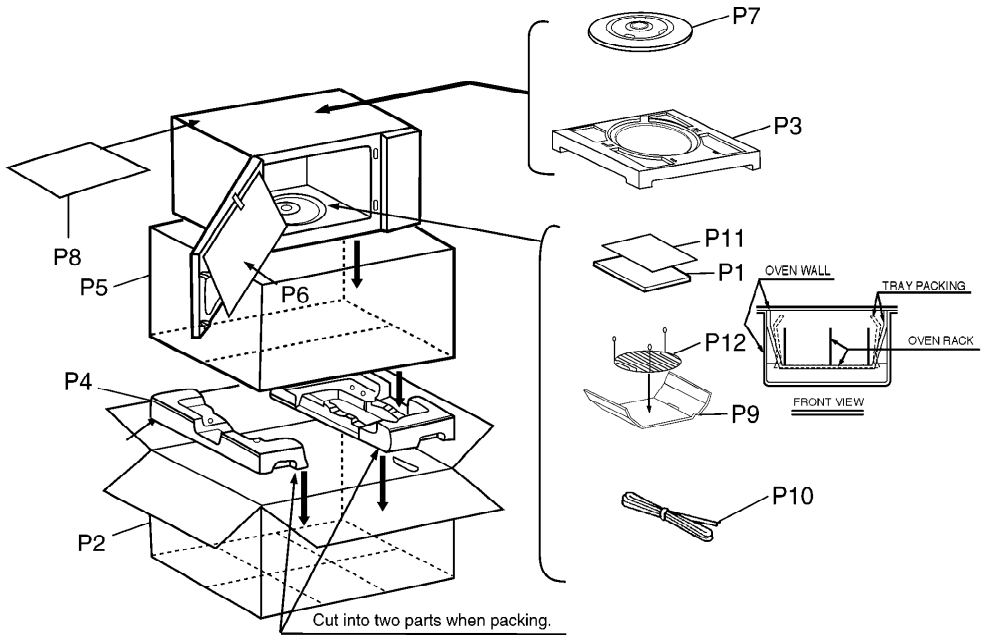
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
E1		F603L8B20WT	D.P.CIRCUIT (AU)	1	K584SF
E2		F603Y8B20WT	D.P.CIRCUIT (BU)	1	K584SF
E3		F630Y8B20SWT	MEMBRANE SWITCH (U)	1	K584SF
E4		F800L8B20SWT	ESCUTCHEON BASE (U)	1	K584SF
E5		F891P6W50SXP	DOOR OPENING BUTTON (U)	1	K584SF
E6		F80375K00AP	COOK BUTTON SPRING	1	
E7		F82565Q00AP	DOOR OPENING LEVEL	1	
E8		F82986W50XP	BUTTON	1	K584SF
E9		F90096W50XP	GROUNDING PANEL	1	K584SF
E10		F66166W50XP	FLAT CABLE	1	K584SF

3.6.2. NN-K575MF/S575MF/S565JF



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
E1		F603L8B30WT	D.P.CIRCUIT (AU)	1	K575MF
E1		F603L8B40WT	D.P.CIRCUIT (AU)	1	S575MF
E1		F603L5Q00WT	D.P.CIRCUIT (AU)	1	S565JF
E3		F630Y8B30SWT	MEMBRANE SWITCH (U)	1	K575MF
E3		F630Y8B40SWT	MEMBRANE SWITCH (U)	1	S575MF
E3		F630Y8B50NWT	MEMBRANE SWITCH (U)	1	S565JF
E4		F800L6W70SXP	ESCUTCHEON BASE (U)	1	K575MF, S575MF
E4		F80346D80NXP	ESCUTCHEON BASE	1	S565JF
E5		F80726W70SXP	DOOR OPENING BUTTON	1	K575MF, S575MF
E5		F80725Q00NAP	DOOR OPENING BUTTON	1	S565JF
E6		F80375K00AP	COOK BUTTON SPRING	1	
E7		F82565Q00AP	DOOR OPENING LEVEL	1	

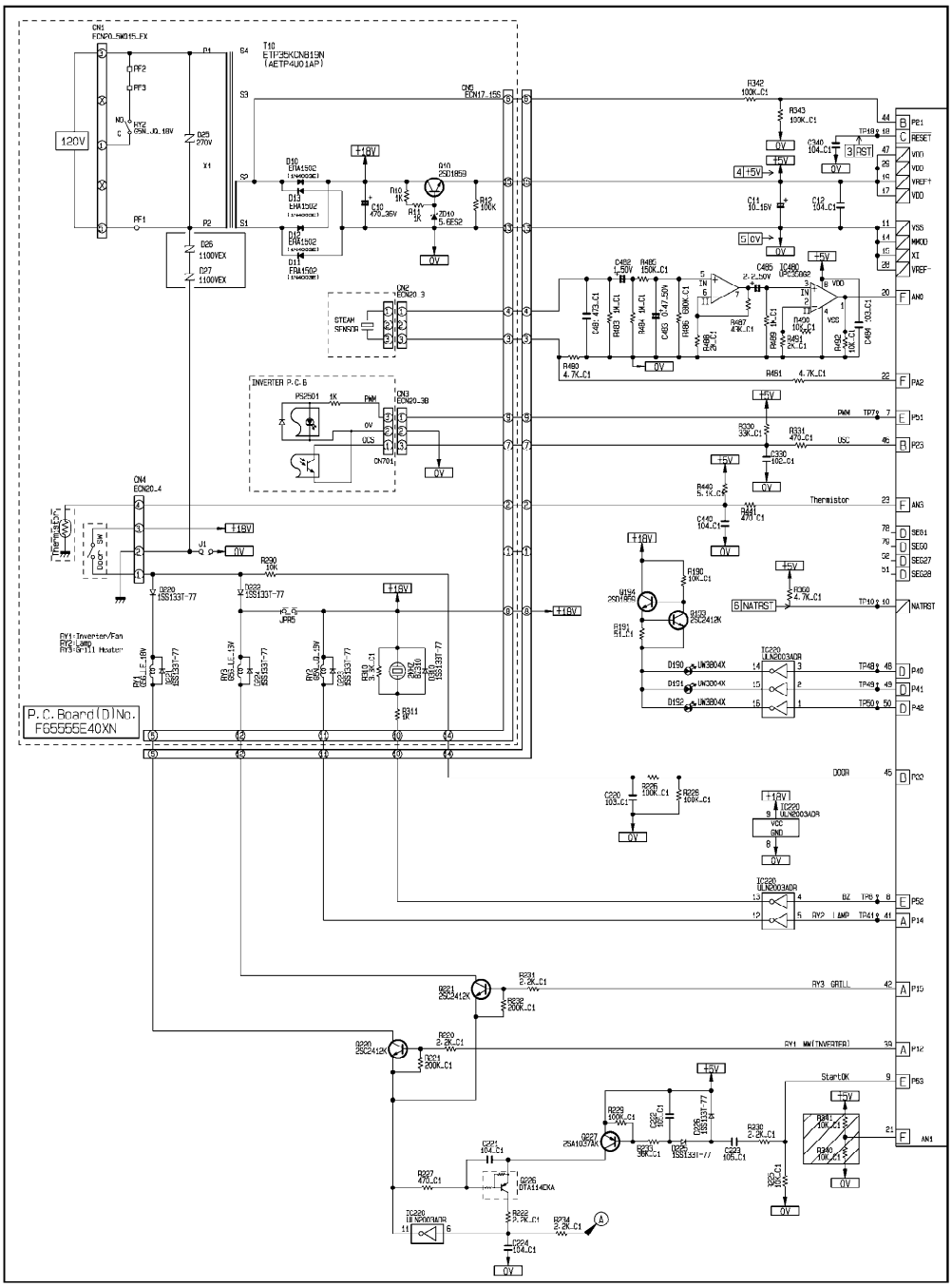
3.7. PACKING AND ACCESSORIES

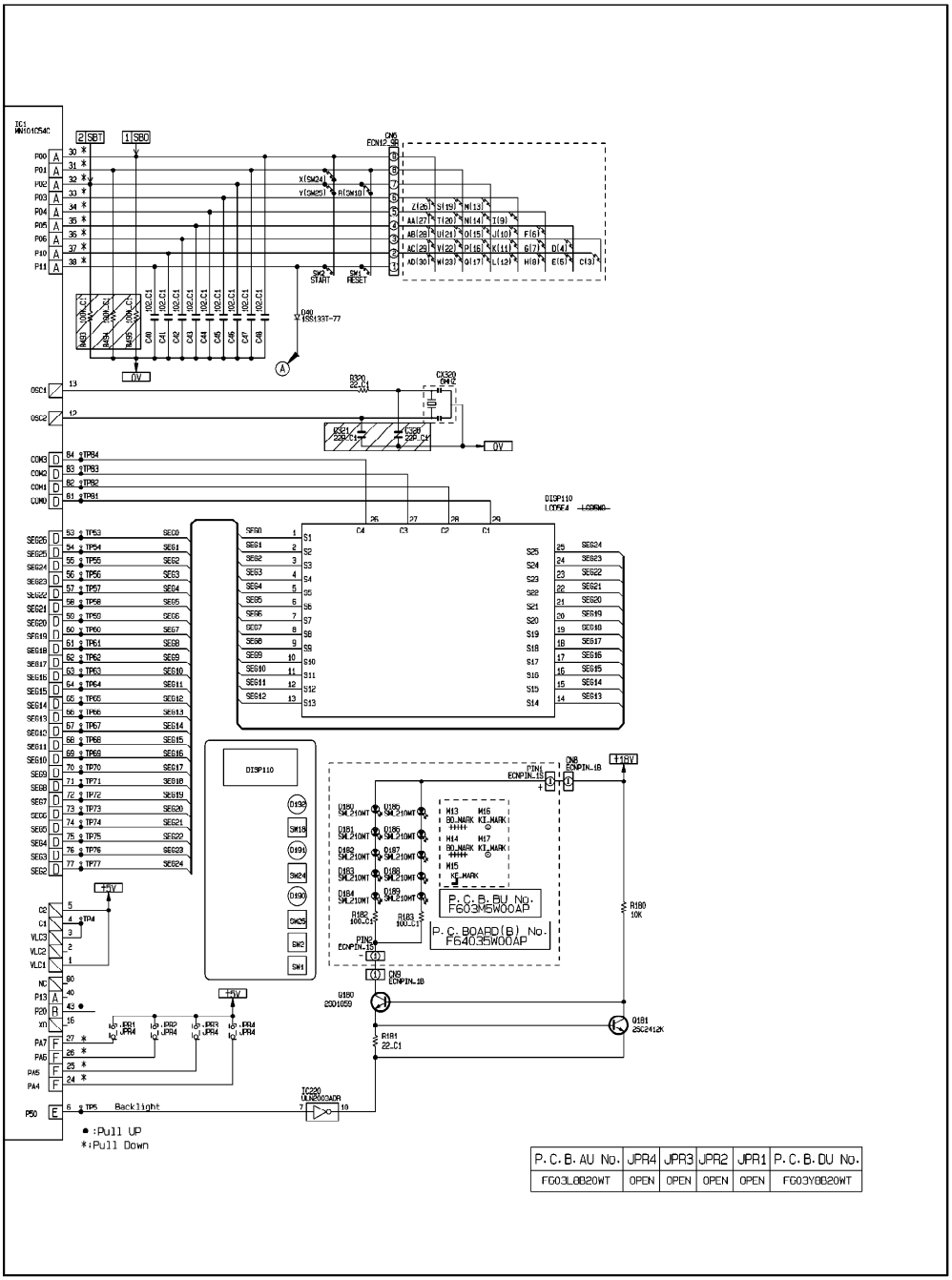


Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
P1		F00038B20WT	INSTRUCTION MANUAL	1	K584SF
P1		F00038B30WT	INSTRUCTION MANUAL	1	K575MF
P1		F00038B40WT	INSTRUCTION MANUAL	1	S575MF
P1		F00038B50WT	INSTRUCTION MANUAL	1	S565JF
P2		F01028B20SWT	PACKING CASE, PAPER	1	K584SF
P2		F01028B30SWT	PACKING CASE, PAPER	1	K575MF
P2		F01028B40SWT	PACKING CASE, PAPER	1	S575MF
P2		F01028B50NWT	PACKING CASE, PAPER	1	S565JF
P3		F01046W50XP	UPPER FILLER	1	EXCEPT S565JF
P3		F01045Q00AP	UPPER FILLER	1	S565JF
P4		F01056W50XP	LOWER FILLER	1	EXCEPT S565JF
P4		F01055Q00AP	LOWER FILLER	1	S565JF
P5		F01068100XN	P.E.BAG	1	
P6		F01078100XN	DOOR SHEET	1	
P7		F06015Q00AP	COOKING TRAY	1	
P8		F01924T00AP	SHEET	1	
P9		F01085R00AP	RACK PACKING	1	K584SF, K575MF
P10		F9164-5G10	EARTH LEAD	1	
P11		F000B8B20WT	COOKING GUIDE	1	
P12		F060V5U00XN	OVEN RACK	1	K584SF, K575MF

4. DIGITAL PROGRAMMER CIRCUIT

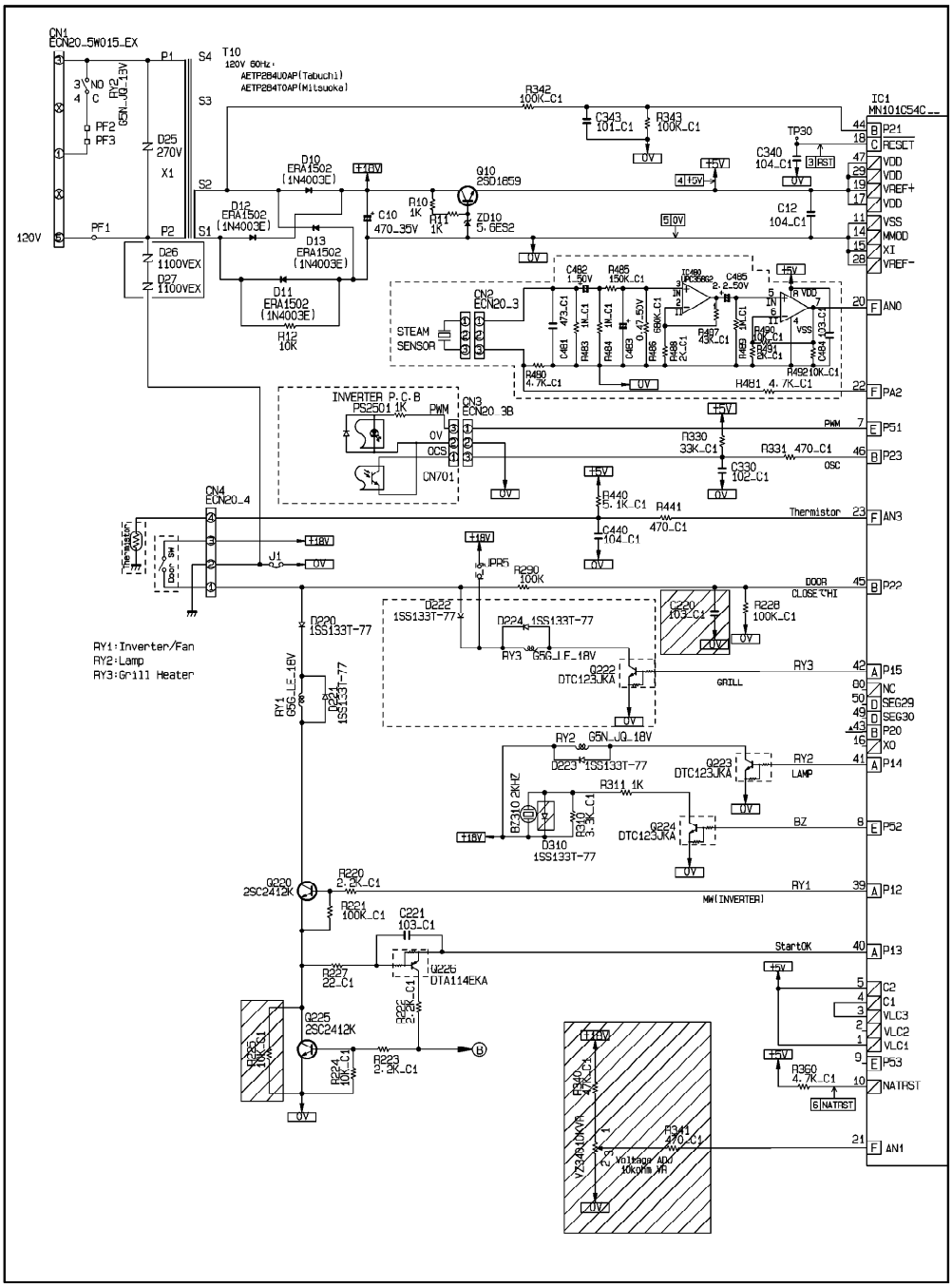
4.1. SCHEMATIC DIAGRAM(NN-K584SF)

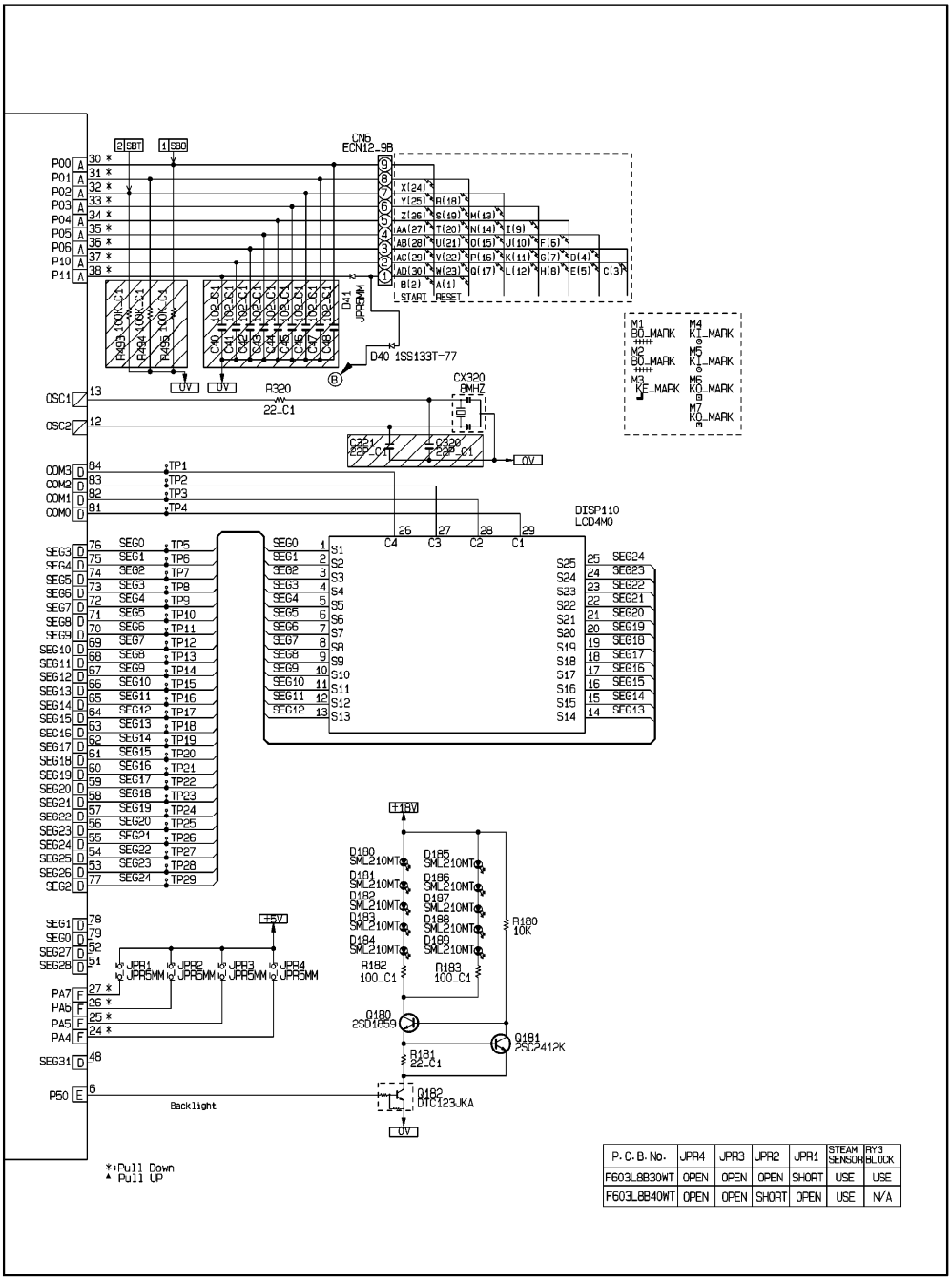

120V
P.C.Board(D)No.
F65555E40XN
INVERTER P.C.B
STEAM SENSOR
DOOR
RESET
VDD
VREF+
VSS
XI
VREF-
PWM
USC
Thermistor
NATRST
DOOR
StartOK
RY1 MW(INVERTER)
RY3 GRILL
+18V
+5V
0V



P.C.B. AU No.	JPR4	JPR3	JPR2	JPR1	P.C.B. DU No.
FG03L0B20WT	OPEN	OPEN	OPEN	OPEN	FG03Y0B20WT

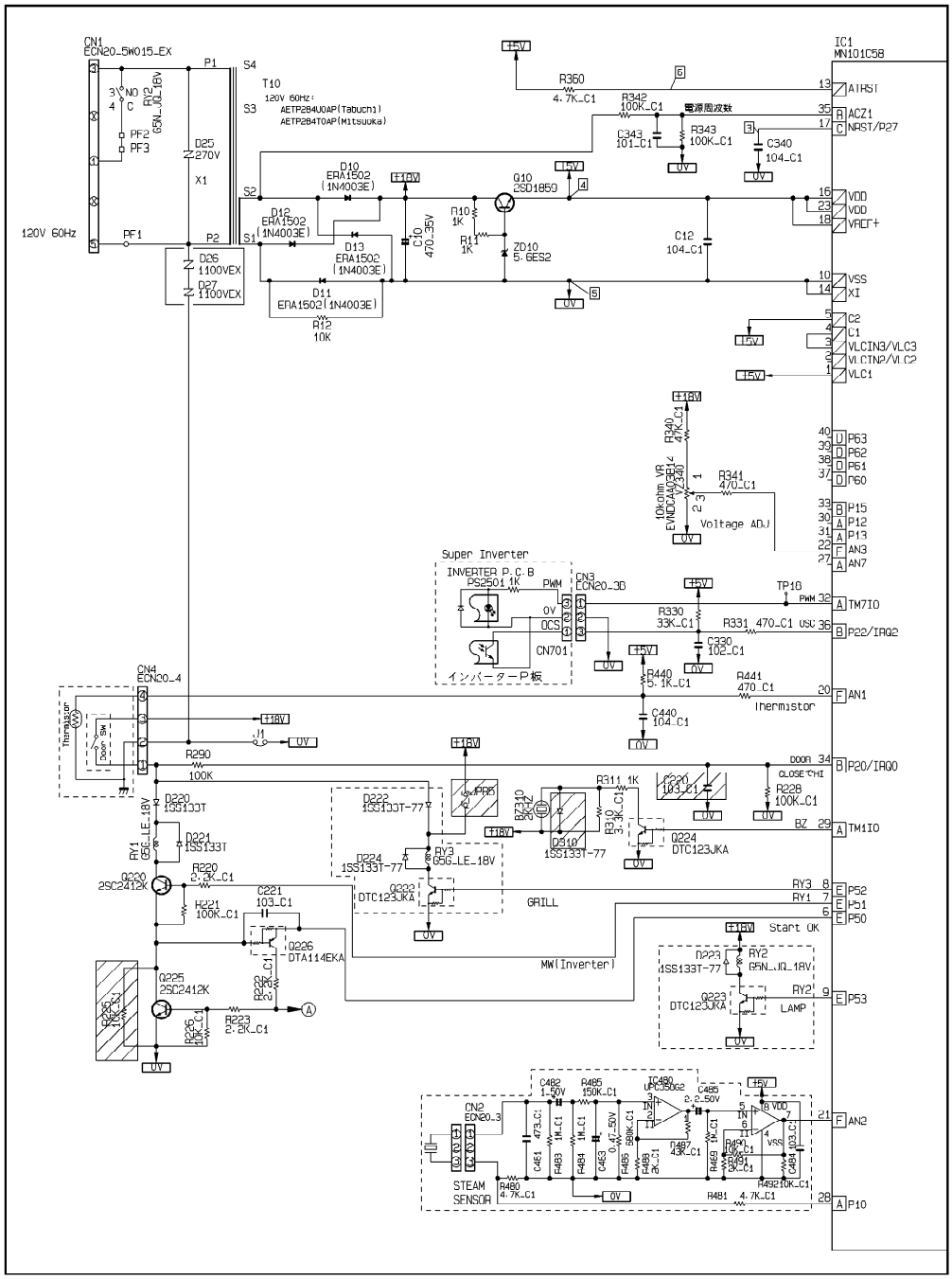
4.2. SCHEMATIC DIAGRAM (NN-K575MF/S575MF)

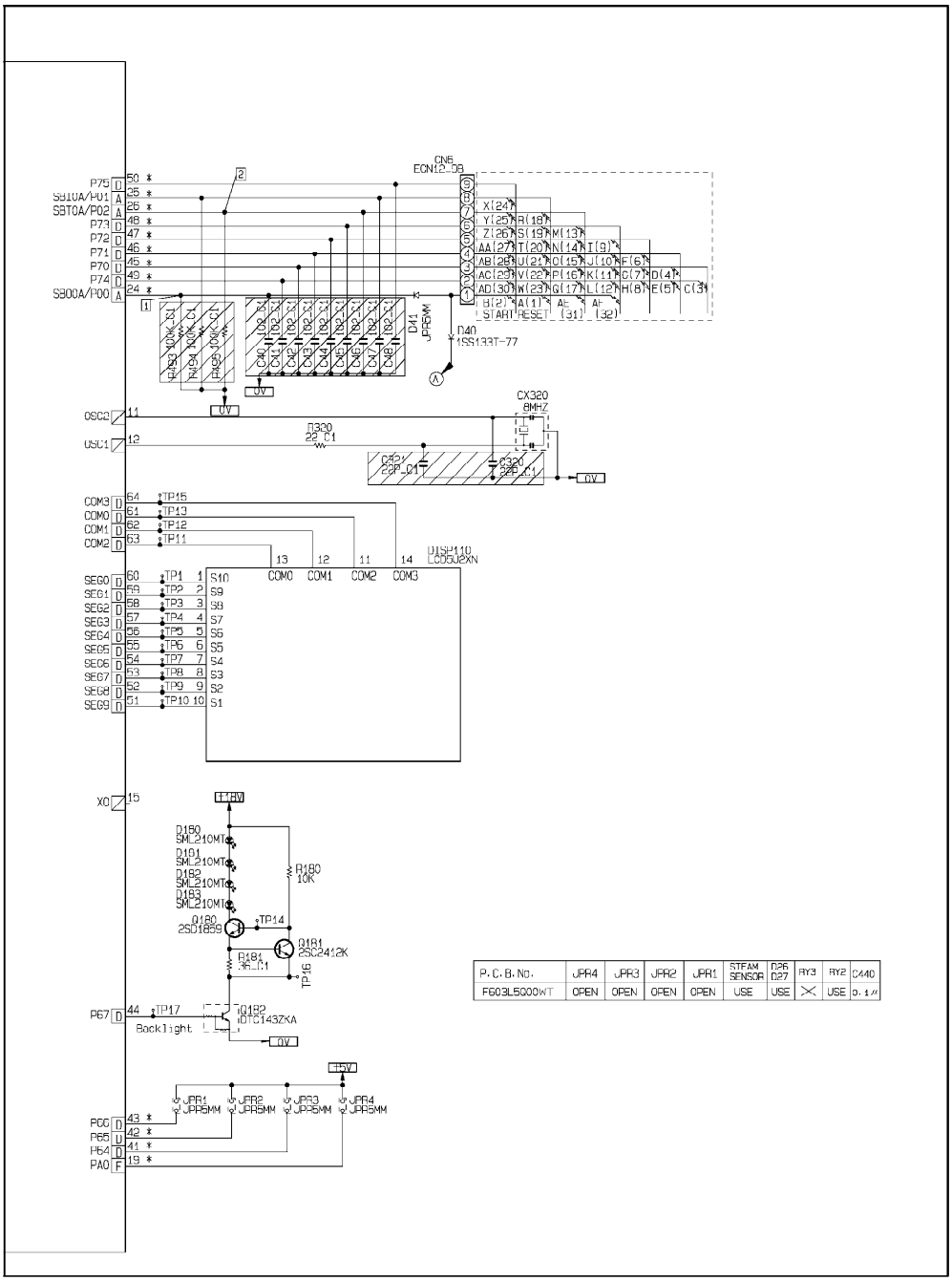

CN1
ECN20_5W015_EX
T10
120V 60Hz:
AETP284U0AP(Tabuchi)
AETP284T0AP(Mitsuoka)
IC1
MN101C54C__
120V
STEAM
SENSOR
INVERTER P.C.B
PS2501 1K
PWM
OCS
CN701
RY1:Inverter/Fan
RY2:Lamp
RY3:Grill Heater
Thermistor
DOOR
CLOSE"HI
GRILL
LAMP
BZ
MW(INVERTER)
StartOK
NATRST
Voltage ADJ
10kohm VR



P.C.B.No.	JPR4	JPR3	JPR2	JPR1	STEAM SENSOR	RY3 BLOCK
F603L8B30WT	OPEN	OPEN	OPEN	SHORT	USE	USE
F603L8B40WT	OPEN	OPEN	SHORT	OPEN	USE	N/A

4.3. SCHEMATIC DIAGRAM (NN-S565JF)


CN1
ECN20_5W015_EX
IC1
MN101C58
T10
120V 60Hz:
AETP284U0AP(Tabuchi)
AETP284T0AP(Mitsuoka)
120V 60Hz
Super Inverter
INVERTER P.C.B
CN701
インバーター PCB
CN4
ECN20_4
Thermistor
Door SW
Voltage ADJ
Thermistor
GRILL
MW(Inverter)
Start UK
LAMP
STEAM
SENSOR
CN2
ECN20_3
CN3
ECN20_3D
ATRST
ACZ1
NRST/P27
VDD
VDD
VREF+
VSS
XI
C2
C1
VLCIN3/VLC3
VLCIN2/VLC2
VLC1
P63
P62
P61
P60
P15
P12
P13
AN3
AN7
TM7IO
P22/IRQ2
AN1
P20/IRQ0
TM1IO
P52
P51
P50
P53
AN2
P10



P.C.B.NO.	JPR4	JPR3	JPR2	JPR1	STEAM SENSOR	D26 D27	RY3	RY2	C440
F603L5Q00WT	OPEN	OPEN	OPEN	OPEN	USE	USE	×	USE	0.1μ

4.4. PARTS LIST

4.4.1. NN-K584SF

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ310		L0DDEA000014	BUZZER	1	2.0KHz
C10		AECETK1V471B	AL CHEM CAPACITOR	1	470 μ F/35V
C11		AECETS1C220B	AL CHEM CAPACITOR	1	22 μ F/16V
C482		AECETS1H010B	AL CHEM CAPACITOR	1	1 μ F/50V
C483		AECETS1HR47B	AL CHEM CAPACITOR	1	0.47 μ F/50V
C485		AECETS1H2R2B	AL CHEM CAPACITOR	1	2.2 μ F/50V
C220, C484		F1H1H103A897	CHIP CAPACITOR	2	0.01 μ F/50V
C12, C221, C224, C340, C440		F1H1E104A108	CHIP CAPACITOR	5	0.1 μ F/25V
C222, C223		F1H1A105A068	CHIP CAPACITOR	2	1 μ F/10V
C40, C41, C42, C43, C44, C45, C46, C47, C48, C330		F1H1H102A896	CHIP CAPACITOR	10	1000PF/50V
C481		F1H1H473A897	CHIP CAPACITOR	1	0.047 μ F/50V
CN1		K1KA03AA0108	CONNECTOR	1	5 pin
CN2		K1KA03A00300	CONNECTOR	1	3 pin
CN3		F03525E30XN	CONNECTOR	1	3 pin
CN4		K1KA04AA0086	CONNECTOR	1	4 Pin
CN5		K1MN15A00045	CONNECTOR	1	15 Pin
CN6		K1MN09BA0135	CONNECTOR	1	9 pin
CN7		K1MN15B00083	CONNECTOR	1	15 pin
PIN1, PIN2		K4CE01000003	PIN	2	
CX320		EFOEC8004A4	CERAMIC RESONATOR	1	8.00MHz
D180, D181, D182, D183, D184, D185, D186, D187, D188, D189		AESQPY1112H	LCD	10	
D40, D225, D226, D310		B0AACK000004	DIODE	4	
D10, D11, D12, D13		B0EAKT000025	DIODE	4	
D25		AERZ271KSBN	VARSITOR	1	
D26, D27		AERZ102KSBN	VARSITOR	2	
D180, D181, D182, D183, D184, D185, D186, D187, D188, D189		B3ACB0000065	CHIP LED	10	
D190, D191, D192		B3AFA0000053	CHIP LED	3	
DISP110		L5AAAFD00026	LCD	1	
DISPL1 HOLD		F66175W00AP	LCD HOLDER	1	
		F67525E40XN	DIFFUSION SHEET	1	
IC1		MN101C54CFGM	L.S.I.	1	
IC480		C0AABA000051	IC	1	
IC220		B1HBGGF00007	IC	1	
Q10, Q180, Q194		B1BAAJ000003	TRANSISTOR	3	
Q181, Q193, Q220, Q221		2SD0601A0L	CHIP TRANSISTOR	4	
Q226		UNR211100L	CHIP DIGI-TRANSISTOR	1	
Q227		2SB0709A0L	CHIP TRANSISTOR	1	
R182, R183		D0GB101JA069	CHIP RESISTOR	2	100 Ω, 1/10W, 5%
R190, R225, R490, R492		D0GB103JA072	CHIP RESISTOR	4	10K, 1/10W, 5%
R226, R228, R229, R342, R343		D0GB104JA068	CHIP RESISTOR	5	100K, 1/10W, 5%
R483, R484, R489		D0GB105JA071	CHIP RESISTOR	3	1M, 1/10W, 5%
R485		D0GB154JA068	CHIP RESISTOR	1	150K, 1/10W, 5%
R488, R491		D0GB202JA071	CHIP RESISTOR	2	2K, 1/10W, 5%
R221, R232		AERJ06J204R	CHIP RESISTOR	2	200K, 1/10W, 5%
R181, R320		D0GB220JA072	CHIP RESISTOR	2	22 Ω, 1/10W, 5%
R220, R222, R230, R231, R234		D0GB222JA072	CHIP RESISTOR	5	2.2K, 1/10W, 5%
R330		D0GB333JA070	CHIP RESISTOR	1	33K, 1/10W, 5%
R223		D0GB363JA072	CHIP RESISTOR	1	36K, 1/10W, 5%
R487		D0GB433JA072	CHIP RESISTOR	1	43K, 1/10W, 5%

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
R227, R331, R441		D0GB471JA069	CHIP RESISTOR	3	470 Ω , 1/10W, 5%
R360, R480, R481		D0GB472JA072	CHIP RESISTOR	3	4.7K, 1/10W, 5%
R191		D0GB510JA072	CHIP RESISTOR	1	51 Ω , 1/10W, 5%
R440		D0GB512JA072	CHIP RESISTOR	1	5.1K, 1/10W, 5%
R486		D0GB684JA068	CHIP RESISTOR	1	680K, 1/10W, 5%
R10, R11, R311		D0AE102JA155	CARBON FILM RESISTOR	3	1K, 1/4W, 5%
R12, R180		D0AE103JA155	CARBON FILM RESISTOR	2	10K, 1/4W, 5%
R290		D0AE104JA155	CARBON FILM RESISTOR	1	100K, 1/4W, 5%
R310		D0AE332JA155	CHIP RESISTOR	1	3.3K, 1/4W, 5%
RY1, RY3		AEBGJQC25F18	POWER RELAY	2	
RY2		K6B1AZA00011	POWER RELAY	1	
T10		G4C2AAD00005	LOW VOLTAGE TRANSFORMER	1	
ZD10		B0BA5R600016	ZENER DIODE	1	
SW1, SW2, SW18, SW24, SW25		EVQ11L05R	SWITCH	5	

4.4.2. NN-K575MF/S575MF/S565JF

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ310		L0DDEA000014	BUZZER	1	2.0KHz
C10		AECETK1V561B	AL CHEM CAPACITOR	1	560 μ F/35V (K575MF/S575MF)
C10		AECETK1V471B	AL CHEM CAPACITOR	1	470 μ F/35V (S565JF)
C482		AECETS1H010B	AL CHEM CAPACITOR	1	1 μ F/50V
C483		AECETS1HR47B	AL CHEM CAPACITOR	1	0.47 μ F/50V
C485		AECETS1H2R2B	AL CHEM CAPACITOR	1	2.2 μ F/50V
C221, C484		F1H1H103A897	CHIP CAPACITOR	2	0.01 μ F/50V
C12, C340, C440		F1H1E104A108	CHIP CAPACITOR	3	0.1 μ F/25V
C320, C321		F1H1H220A894	CHIP CAPACITOR	2	22PF/50V (K575MF/S575MF)
C343		F1H1H101A894	CHIP CAPACITOR	1	100PF/50V
C330		F1H1H102A896	CHIP CAPACITOR	1	1000PF/50V
C481		F1H1H473A897	CHIP CAPACITOR	1	0.047 μ F/50V
CN1		K1KA03AA0108	CONNECTOR	1	5 pin
CN2		K1KA03A00300	CONNECTOR	1	3 pin
CN3		F03524U50AP	CONNECTOR	1	3 pin
CN4		K1KA04AA0086	CONNECTOR	1	4 Pin
CN6		K1MN09AA0040	CONNECTOR	1	9 pin
CX320		EFOEC8004A4	CERAMIC RESONATOR	1	8.00MHz
D180,D181, D182, D183		B3ABB0000103	CHIP-LED	4	(K575MF/S575MF)
D184, D185, D186, D187, D188, D189		B3ABB0000103	CHIP-LED	6	
D10, D11, D12, D13		B0EAKT000025	DIODE	4	
D40, D220, D221, D223		B0AACK000004	DIODE	4	
D222, D224		B0AACK000004	DIODE	2	(K575MF)
DISP110		L5AAAFD00026	LCD	1	(K575MF/S575MF)
DISP110		AEDDHJ5U20XN	LCD	1	(S565JF)
DISPL1 HOLD		F66175E40XN	LCD HOLDER	1	(K575MF/S575MF)
DISP1 HOLDER		F66174U20AP	LCD HOLDER	1	(S565JF)
		F67525E40XN	DIFFUSION SHEET	1	(K575MF/S575MF)
D25		AERZ271KSBN	VARSITOR	1	
D26, D27		AERZ102KSBN	VARSITOR	2	
IC1		MN101C54CGM	L.S.I.	1	(K575MF/S575MF)
IC1		MN101C58AEK	L.S.I	1	(S565JF)

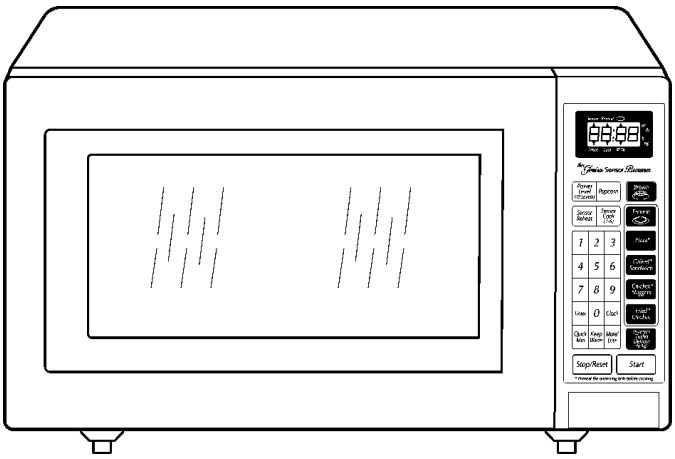
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
IC480		C0AABA000051	IC	1	
Q226		UNR211100L	CHIP DIGI-TRANSISTOR	1	
Q182, Q223, Q224		B1GBCFEL0002	CHIP DIGI-TRANSISTOR	3	
Q222		B1GBCFEL0002	CHIP DIGI-TRANSISTOR	1	(K575MF)
Q10 , Q180		B1BAAJ000003	TRANSISTOR	2	
Q181, Q220, Q225		2SD0601A0L	CHIP TRANSISTOR	3	
R182, R183		D0GB101JA069	CHIP RESISTOR	2	100 Ω , 1/10W, 5% (K575MF/ S575MF)
R490, R492		D0GB103JA072	CHIP RESISTOR	2	10K, 1/10W, 5%
R224		D0GB103JA072	CHIP RESISTOR	1	10K, 1/10W, 5% (K575MF/S575MF)
R221, R228, R342, R343		D0GB104JA068	CHIP RESISTOR	4	100K, 1/10W, 5%
R483, R484, R489		D0GB105JA071	CHIP RESISTOR	3	1M, 1/10W, 5%
R485		D0GB154JA068	CHIP RESISTOR	1	150K, 1/10W, 5%
R488, R491		D0GB202JA071	CHIP RESISTOR	2	2K, 1/10W, 5%
R181, R227		D0GB220JA072	CHIP RESISTOR	2	22 Ω , 1/4W, 5% (K575MF/S575MF)
R320		D0GB220JA072	CHIP RESISTOR	1	22 Ω , 1/10W, 5%
R220, R222, R223		D0GB222JA072	CHIP RESISTOR	3	2.2K, 1/10W, 5%
R310		D0GB332JA072	CHIP RESISTOR	1	3.3K, 1/10W, 5%
R330		D0GB333JA070	CHIP RESISTOR	1	33K, 1/10W, 5%
R487		D0GB433JA072	CHIP RESISTOR	1	43K, 1/10W, 5%
R331, R441		D0GB471AJ069	CHIP RESISTOR	2	470 Ω , 1/10W, 5%
R360, R480, R481		D0GB472JA072	CHIP RESISTOR	1	4.7K, 1/10W, 5%
R440		D0GB512JA072	CHIP RESISTOR	1	5.1K, 1/10W, 5%
R486		D0GB684JA068	CHIP RESISTOR	1	680K, 1/10W, 5%
R10, R11, R311		D0AE102JA155	CARBON FILM RESISTOR	3	1K, 1/4W, 5%
R12, R180		D0AE103JA155	CARBON FILM RESISTOR	2	10K, 1/4W, 5%
R290		D0AE104JA155	CARBON FILM RESISTOR	1	100K, 1/4W, 5%
VZ340		D3CA6103A017	VARISTOR	1	10K Ω
RY1		K6B1AZA00005	POWER RELAY	1	
RY2		K6B1AZA00011	POWER RELAY	1	
RY3		K6B1AZA00005	POWER RELAY	1	(K575MF)
T10		G4C2AAD00005	LOW VOLTAGE TRANSFORMER	1	
ZD10		B0BA5R600016	ZENER DIODE	1	

iPress0023, 07/05 / S-8B2, S-8B3 / S-8B4, S-8B5 / Printed in China

ORDER NO.SIMMC0303011C7

Service Manual

Microwave Oven



NN-G463
NN-S443
NN-S423
NN-S413
NN-413

APH(USA)
CPH(CANADA)
RPH(MEXICO/LATIN AMERICAN)

Specification

Models		G463WF/MF APH G463MF/MM RPH	G463WF CPH	S443BF/WF APH	S423BF/WF APH	S413MF/WF CPH	413WF RPH
Power Source:		120V AC Single Phase,60Hz					
Power Requirement:	Microwave	1230W	1230W	1230W	1230W	1230W	1230W
	Heater	1100W	1100W	—	—	—	—
Output:	Microwave(IEC705)	1200W	1100W	1200W	1200W	1100W	1200W
	Heater	1100W	1100W	—	—	—	—
Microwave Frequency:		2450MHz					
Timer:		99 Min.99Sec					
Outside Dimensions:		304mm(H) x 510mm(W) x 380mm(D)					
Oven Cavity Dimensions:		217mm(H) x 359mm(W) x 352mm(D)					
Weight:		11.5kg-12.5kg					
PbF		This product with PbF					
Output power: IEC705-88 Test Procedure							
Specifications subject to change without notice.							

Panasonic®

© 2003 Shanghai Matsushita Microwave Oven Co., Ltd. All rights reserved. Unauthorized copying and distribution is a violation of law.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J"(D.H.H.S): U.S.A. models
   or "Radiation Emitting Devices Act"(Health and Welfare Canada): Canadian models
   it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
4. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
5. Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.

IN U.S.A. (PASC)	Panasonic Services Company 50 Meadowland Parkway, Secaucus, New Jersey 07094 Attention: Technical Service Division. (201)348-7000	IN PUERTO RICO (PSC)	PSC San Gabriel Industrial Park 65th Infantry Ave. Km.9.5 Carolina, Puerto Rico 00985 (787)750-4300
		IN CANADA (PCI)	Panasonic Canada Inc. 5770 Ambler Drive, Mississauga, Ontario, L4W2T3 (905)624-5010

6. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.
(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
  (1) Interlock operation
  (2) Proper door closing
  (3) Seal and sealing surfaces (arcing, wear, and other damage)
  (4) Damage to or loosening of hinges and latches.
  (5) Evidence of dropping or abuse
(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.
(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

CAUTION

About lead free solder (PbF)

Distinction of PbF PCB: PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:
- Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40˚C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 370 ± 10˚C.
- Pb free solder will tend to splash when heated too high (about 600˚C).

DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)

INVERTER WARNING

This Inverter board looks like a regular PCB. However, this PCB drives the magnetron tube with extremely high voltage and high current. **NEW H.V.**

IT HAS:

1. **Very high voltage and high current circuits.**
   It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.
2. **Aluminum heat sink is energized with very high voltages and high heat energy.**
3. **Very high voltage may remain in circuitry even when oven is off. High voltage charge may remain in the capacitors on the board.**

DO NOT:

* 1. **Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage charge may remain in circuit.**

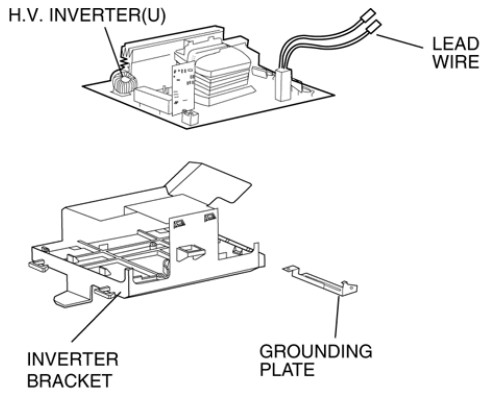
* 2. **Do not touch aluminum heat sink because it is energized with very high voltage and also very hot in high heat energy.**

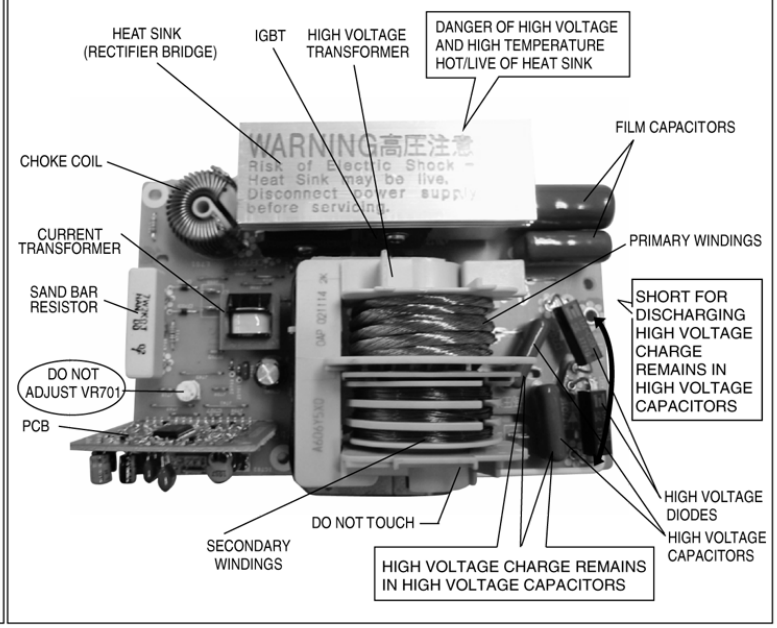
* 3. **Do not try to adjust or tamper with preset control on the Inverter board because it is very dangerous to adjust without proper test equipment.**

* 4. **Do not test oven while Inverter grounding plate or screws are loose. It is very dangerous to operate H.V. Inverter Circuit (U) with loose mounting screws or if improperly grounded.**

* 5. **For USA only:**
Do not try to repair Inverter PCB because it is very dangerous to repair. Replace as a complete High Voltage Inverter Circuit unit and return fully re-packed with original shipping box and shipping materials.

INVERTER POWER SUPPLY





CONTENTS

Page

1 FEATURE CHART ---- 5
2 CONTROL PANEL ---- 5
3 OPERATION AND DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE (NN-G463) ---- 6
4 SCHEMATIC DIAGRAM (G463 APH/RPH) ---- 8
5 SCHEMATIC DIAGRAM (G463 CPH) ---- 9
6 SCHEMATIC DIAGRAM (S443BF/WF APH, S423BF/WF APH, 413WF RPH) ---- 10
7 SCHEMATIC DIAGRAM (S413MF/WF CPH) ---- 11
8 DESCRIPTION OF OPERATING SEQUENCE ---- 12
9 CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING ---- 14
10 DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE ---- 16
11 COMPONENT TEST PROCEDURE ---- 21

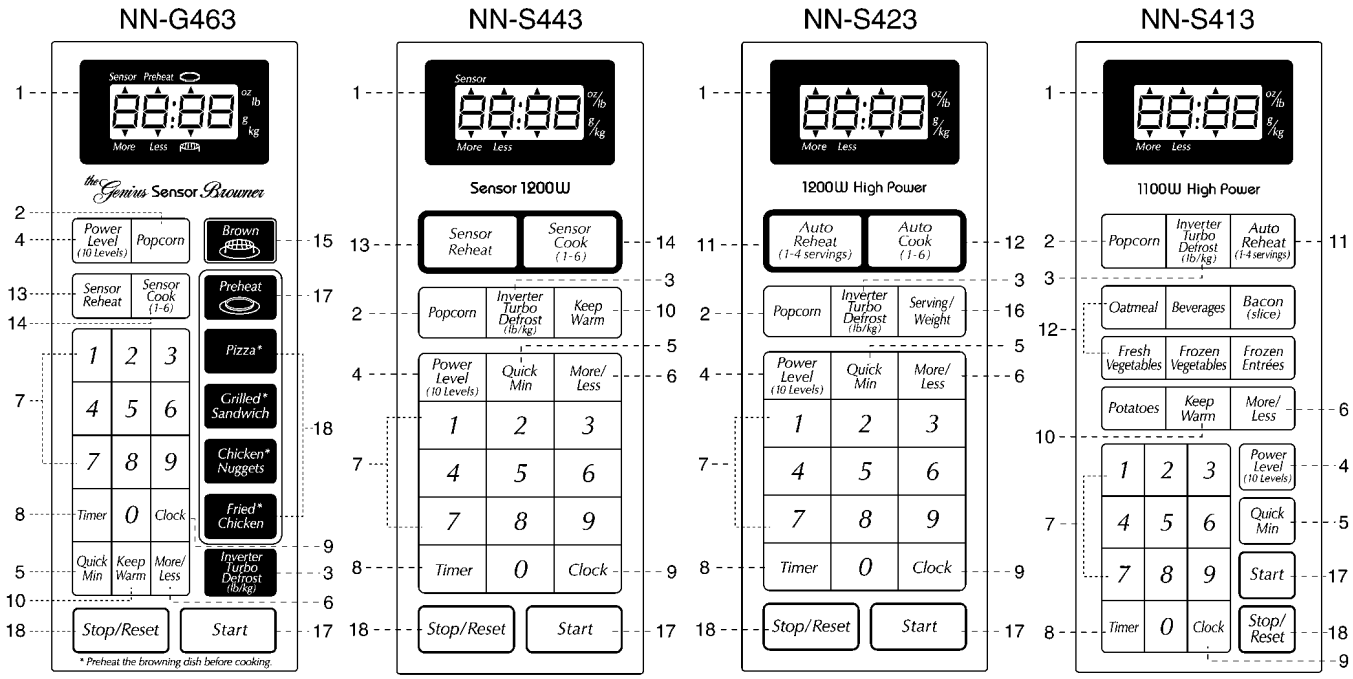
Page

12 MEASUREMENTS AND ADJUSTMENTS ---- 23
13 PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE ---- 24
14 TROUBLESHOOTING GUIDE ---- 26
15 EXPLODED VIEW AND PARTS LIST ---- 31
16 PARTS LIST ---- 32
17 DOOR ASSEMBLY ---- 34
18 WIRING MATERIALS ---- 35
19 ESCUTCHEON BASE ASSEMBLY ---- 36
20 PACKING AND ACCESORIES ---- 37
21 DIGITAL PROGRAMMER CIRCUIT ---- 38
22 DIGITAL PROGRAMMER CIRCUIT ---- 40

1 FEATURE CHART

MODEL / FEATURE	NN-G463	NN-S443	NN-S423	NN-S413
Five Stage Cooking	O	O	O	O
Inverter Turbo Defrost	O	O	O	O
Auto Reheat	-	-	O	O
Auto Cook	-	-	O	O
Sensor Reheat	O	O	-	-
Sensor Cook	O	O	-	-
Timer	O	O	O	O
Digital Clock	O	O	O	O
Child Safety Lock	O	O	O	O
Brown	O	-	-	-
Preheat	O	-	-	-
Auto Brown Cook	O	-	-	-

2 CONTROL PANEL



1. Display Window
2. Popcorn Pad
3. Inverter Turbo Defrost Pad
4. Power Level Pad
5. Quick Min Pad
6. More / Less Pad
7. Number Pads
8. Timer Pad
9. Clock Pad
10. Keep Warm Pad
11. Auto Reheat Pad
12. Auto Cook Pad
13. Sensor Reheat Pad
14. Sensor Cook Pad
15. Brown Pad
16. Serving / Weight Pad
17. Preheat Pad
18. Auto Brown Cook

19. Start Pad
One tap allows oven to begin functioning. If door is opened or STOP/RESET Pad is pressed once during oven operation, START Pad must again be pressed to restart oven.

20.Stop / Reset Pad
Before cooking: One tap clears your instructions.
During cooking: One tap temporarily stops the cooking process. Another tap cancels all your instructions and time of day or colon appears on the display window.

3 OPERATION AND DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE (NN-G463)

3.1. To set clock

OPERATION	SCROLL DISPLAY
1. Plug the power supply cord into wall outlet.	BEFORE USE REFER TO OPERATING INSTRUCTIONS
2. Press **Clock** pad.	☼ ☼
3. Enter time of day (TOD) by pressing appropriate **Number** pads.	11 ☼ 25
4. Press **Clock** pad. TOD has now been resistered into the digital programmer circuit and will count up by minutes.	11 : 25

3.2. Time cooking for two stage

OPERATION	SCROLL DISPLAY
1. Place a water load in the oven.	
2. Press **Power Level** pad once to set High power. (1st stage)	P 10
3. Set for 5 seconds by pressing **Number** pads. 5 Sec.= 5	. 5
4. Press **Power Level** pad 6 times to set Medium power. (2nd stage)	P 5
5. Set for 1 minute by pressing **Number** pads. 1 Min.= 1 0 0	1.00
6. Press **Start** pad.	☼ 5
7. When 1st stage cooking time has elapsed. Oven beeps twice and automatically switches to 2nd stage cooking.	1☼00
8. When 2nd stage cooking time has elapsed, oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display

3.3. Inverter turbo defrost

OPERATION	SCROLL DISPLAY
1. Press **Inverter Turbo Defrost** Pad.	– oz/lb ☼ g/kg
2. Set the weight for 1 lb by pressing **Number** pads. 1 lb= 1 0	– oz/lb 1.0 g/kg
3. Press **Start** pad.	5 ☼ 20
4. Press **Stop/Reset** Pad twice.Oven shuts off.	Time of day or colon if set appears in the display

3.4. Auto Brown Cook (Example to cook 6 oz Pizza)

OPERATION	SCROLL DISPLAY
1. Place brown dish on glass tray, and press **Preheat** pad.	Sensor Preheat More Less
2. Press **Start** pad.	Time in the display window will count down.
3. When preheat time has elapsed, a long beep will be heard every 11 seconds for a time frame of 3 minutes.	Time of day or colon if set appears in the display.
4. Open the door, and carefully place food into the brown dish, then close the door.	
5. Press **Pizza** pad once for 6 oz serving. (select 6, 9, 15oz)	Sensor Preheat – oz/lb 6 g/kg More Less
6. Press **Start** pad.	Sensor Preheat – oz/lb 5 ☼ 30 g/kg More Less
When cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

3.5. Popcorn

OPERATION	SCROLL DISPLAY
1. Press **Popcorn** pad once for 3.5 oz serving. (Select 3.5, 3.0, 1.75 oz)	3.5
2. Press **Start** pad.	3.5
When cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

3.6. Brown

OPERATION	SCROLL DISPLAY
1. Press **Brown** pad.	Sensor Preheat More Less
2. Set for 1 minute by pressing Number Pad. 1 Min.= 1 0 0	Sensor Preheat 1.00 More Less
3. Press **Start** pad.Auto Reheat cycle begins time counts down.	Sensor Preheat 1:00 More Less
4.When cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

3.7. Sensor cooking

OPERATION	SCROLL DISPLAY
1.Pour 150 ± 15cc (4.5 ± 1/2 ozs) of room temperture water in beaker in the center of the oven. Press **Sensor Reheat** pad twice.	
2. Press **Start** pad.	
3.The steam sensor detects steam about 1.5 to 4 minutes after the start pad is pressed. Sensor cooking (T1) automatically switches to cooking time(T2). "Sensor" disappears with beep sounds and the remainder of cooking time appears in the display window. **NOTE:** Cooking time will vary depending on the water temperature, the shape of the beaker or the Power source Voltage.	
4.When cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

3.8. To set child safely lock

OPERATION	SCROLL DISPLAY
1. Press **Start** pad 3 times continuously. "Child" appears in the display.	Child

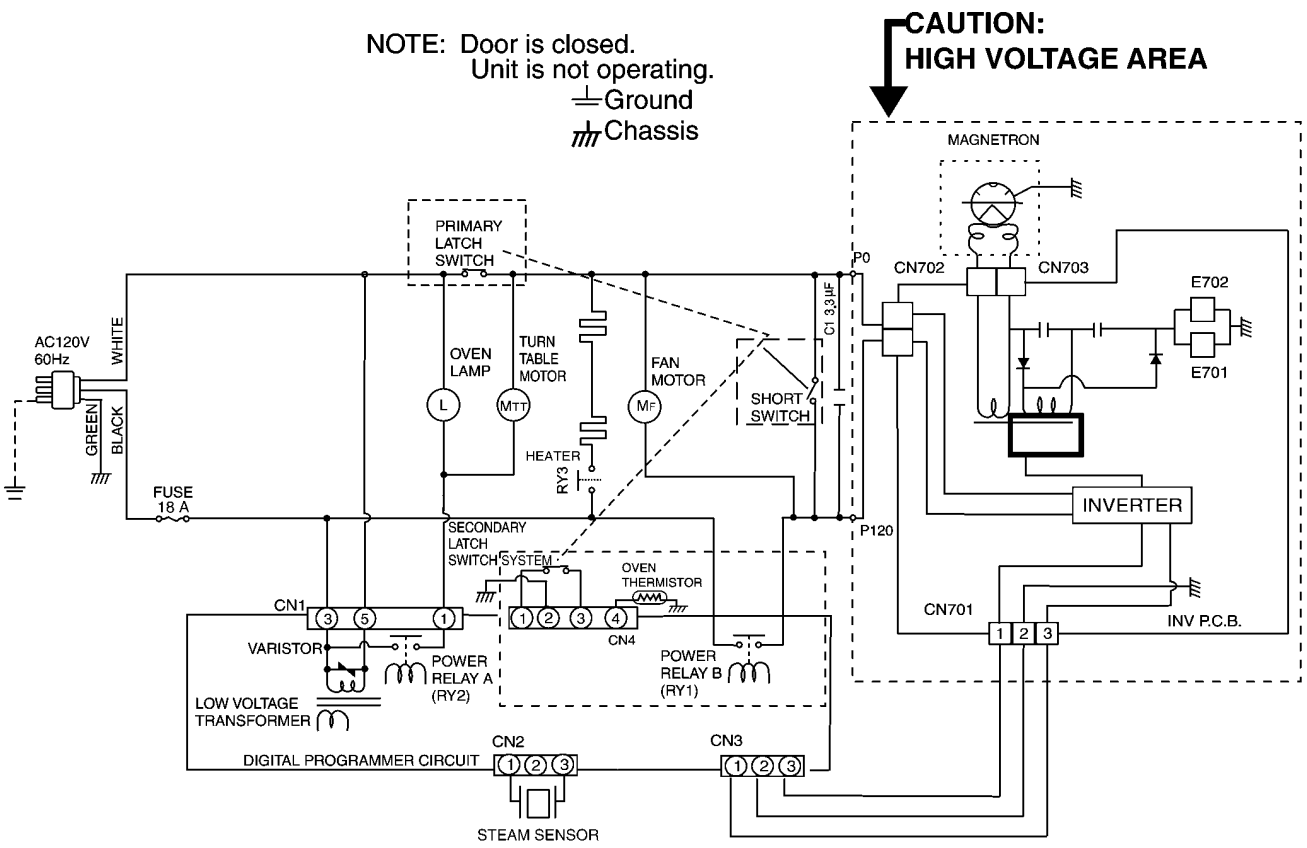
3.9. To reset child lock

OPERATION	SCROLL DISPLAY
1. Press **Stop/Reset** pad 3 times continuously.	Time of day or colon if set appears in the display.

3.10. Power level

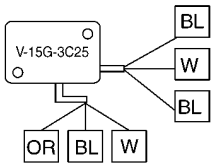
Press Power Level	Power Level	Display Window
once	P10 (HIGH)	P10
twice	P9	P9
3 times	P8	P8
4 times	P7 (MED.HIGH)	P7
5 times	P6 (MEDIUM)	P6
6 times	P5	P5
7 times	P4	P4
8 times	P3 (MEDIUM-LOW)	P3
9 times	P2	P2
10 times	P1 (LOW)	P1

4 SCHEMATIC DIAGRAM (G463 APH/RPH)

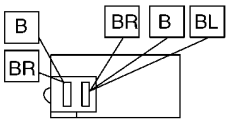


WIRING DIAGRAM

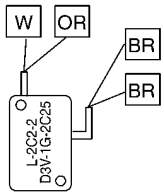
NOTE: * When replacing, check the lead wire color as shown.
***Colors shown by ( ) indicate colors of lead wire connector housing.**



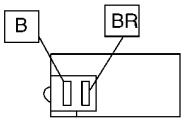
PRIMARY LATCH SWITCH TOP



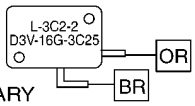
POWER RELAY B(RY1)



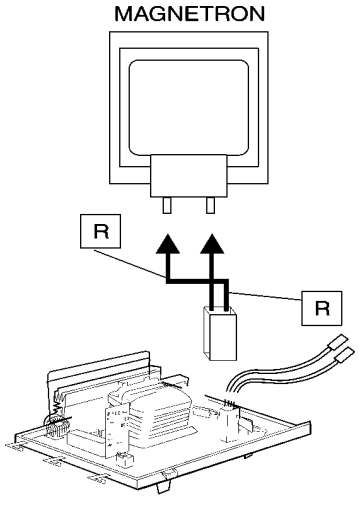
SHORT SWITCH MIDDLE



POWER RELAY (RY3)



SECONDARY LATCH SWITCH BOTTOM

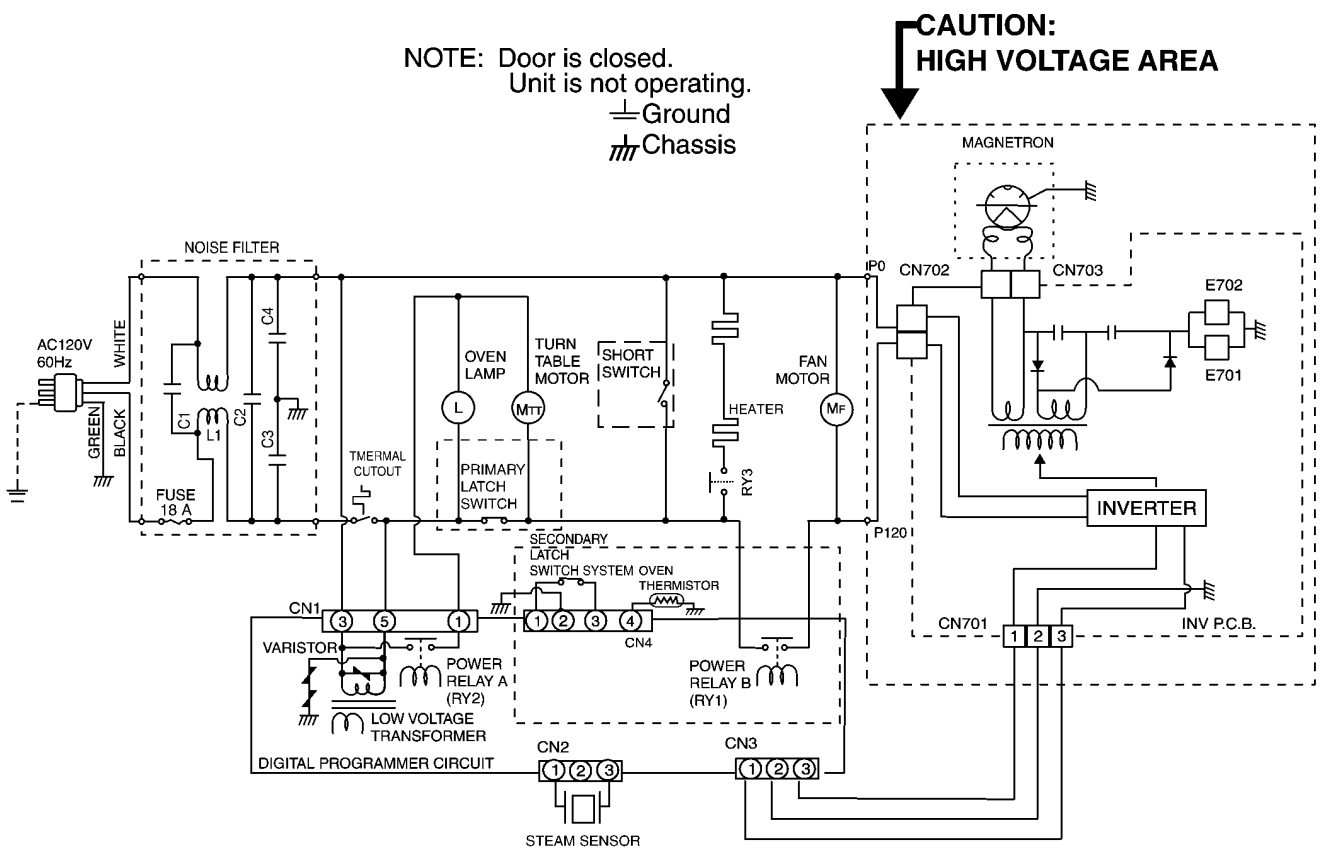


HIGH VOLTAGE INVERTER

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

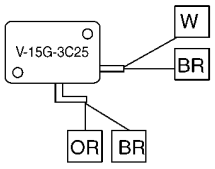
(S-5R0)
(S-5Z7)

5 SCHEMATIC DIAGRAM (G463 CPH)

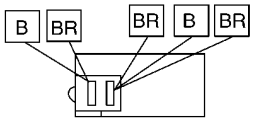


WIRING DIAGRAM

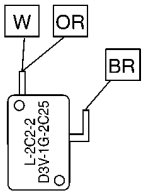
NOTE: * When replacing, check the lead wire color as shown.
***Colors shown by ( ) indicate colors of lead wire connector housing.**



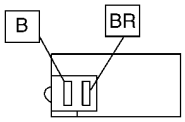
PRIMARY
LATCH SWITCH
TOP



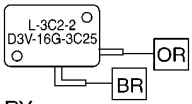
POWER RELAY B(RY1)



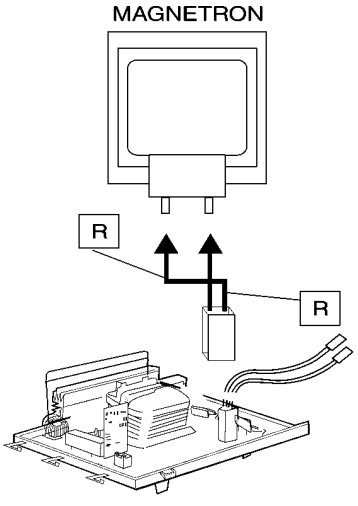
SHORT SWITCH
MIDDLE



POWER RELAY (RY3)



SECONDARY
LATCH SWITCH
BOTTOM

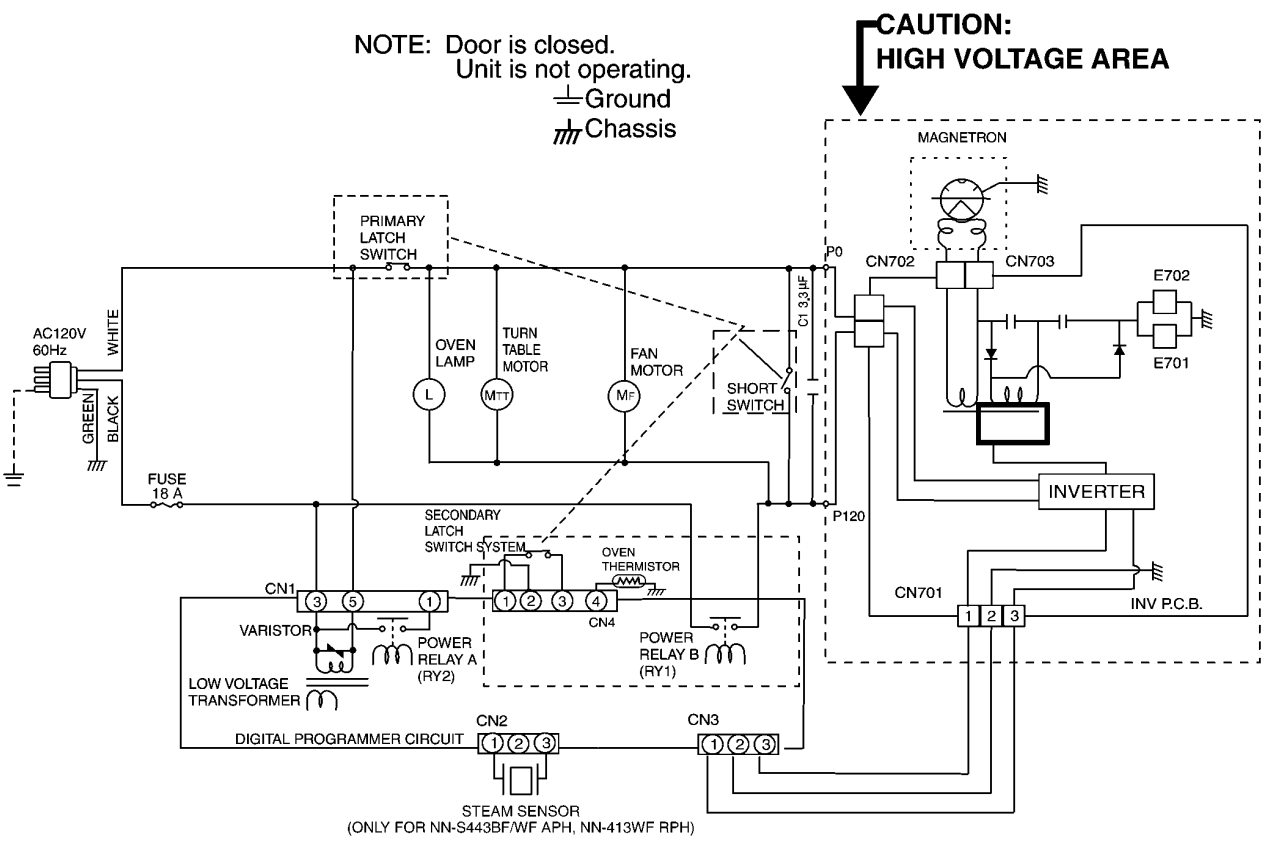


HIGH VOLTAGE INVERTER

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

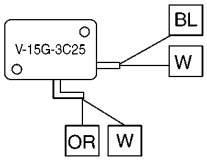
(S-5R5)

6 SCHEMATIC DIAGRAM (S443BF/WF APH, S423BF/WF APH, 413WF RPH)

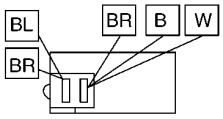


WIRING DIAGRAM

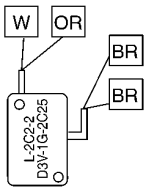
NOTE: * When replacing, check the lead wire color as shown.
***Colors shown by ( ) indicate colors of lead wire connector housing.**



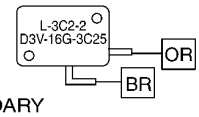
PRIMARY LATCH SWITCH TOP



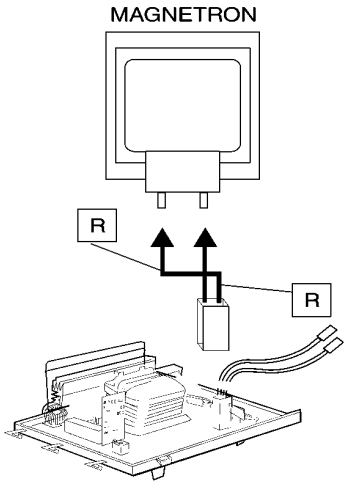
POWER RELAY B(RY1)



SHORT SWITCH MIDDLE



SECONDARY LATCH SWITCH BOTTOM

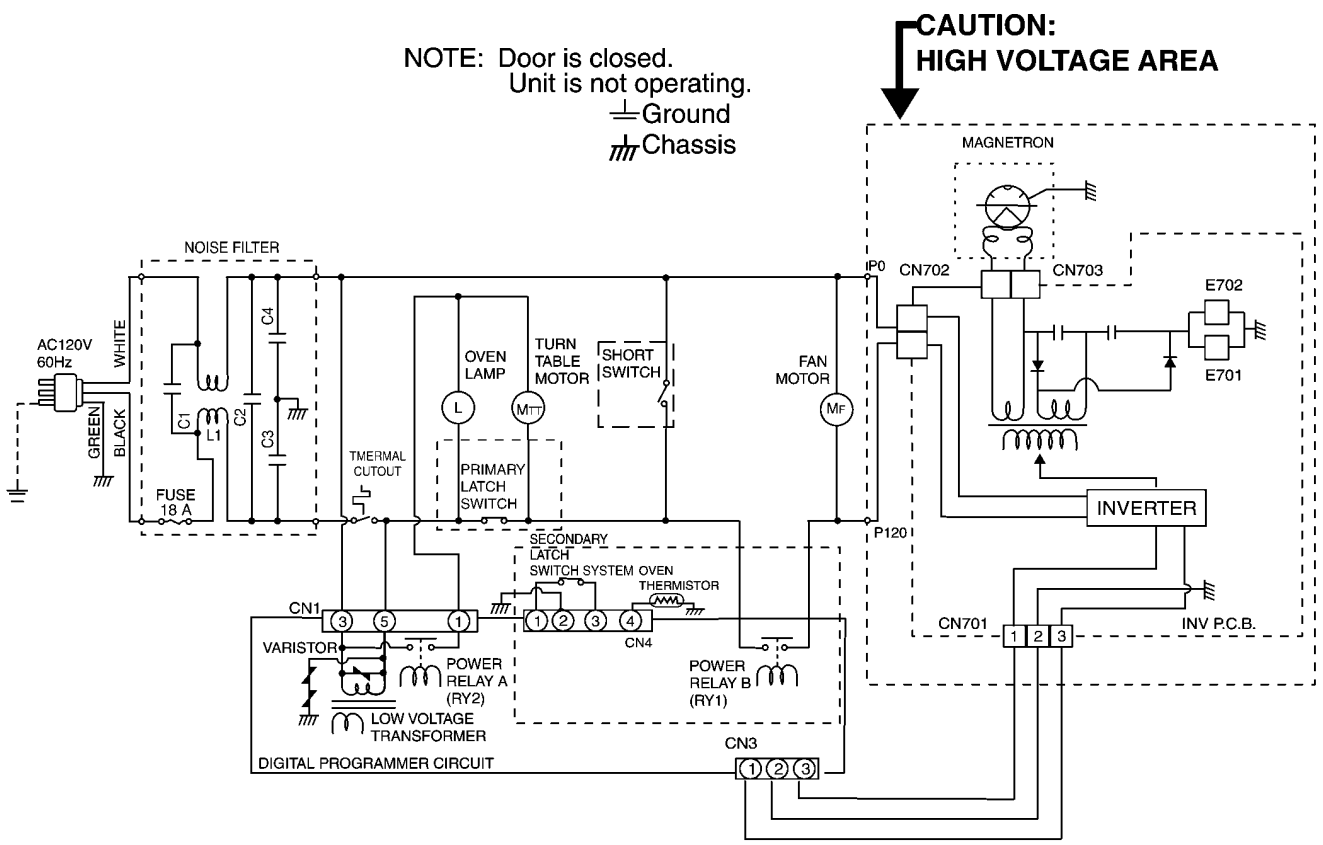


HIGH VOLTAGE INVERTER

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

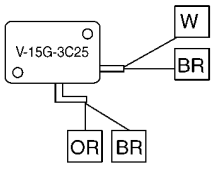
(S-5P9)
(S-5Q0)
(S-5Q2)

7 SCHEMATIC DIAGRAM (S413MF/WF CPH)

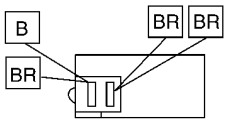


WIRING DIAGRAM

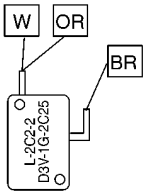
NOTE: * When replacing, check the lead wire color as shown.
***Colors shown by ( ) indicate colors of lead wire connector housing.**



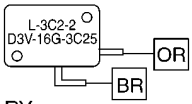
PRIMARY
LATCH SWITCH
TOP



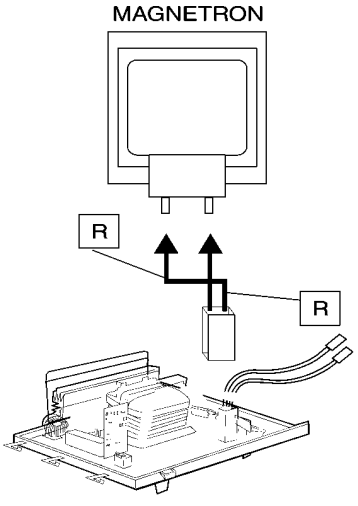
POWER RELAY B(RY1)



SHORT SWITCH
MIDDLE



SECONDARY
LATCH SWITCH
BOTTOM



HIGH VOLTAGE INVERTER

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

(S-5G1)

8 DESCRIPTION OF OPERATING SEQUENCE

8.1. Variable power cooking control

High Voltage Inverter Power supply (U) controls output power by the signal from Digital Programmer Circuit (DPC). Power relay stays ON for P4 to P10 and For P1 to P3, both inverter drive signal and power relay to control output power.

NOTE:

The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

Variable Power Cooking

POWER SETTING		OUTPUT POWER(%) APPROX.	ON-OFF TIME OF POWER RELAY (RY1)	
			ON(SEC)	OFF(SEC)
HIGH	P10	100%	22	0
	P9	90%	22	0
	P8	80%	22	0
MEDIUM-HIGH	P7	70%	22	0
MEDIUM	P6	60%	22	0
	P5	50%	22	0
	P4	40%	22	0
MEDIUM-LOW	P3	30%	22	0
	P2	20%	15	7
	P1	10%	8	14
DEFROST	P3	30%	22	0

8.2. Inverter power supply circuit NEW H.V.

This Inverter Power Supply Circuit supplies 4,000V DC to the magnetron tube from the line voltage, 120V 60Hz AC input. functions as the H.V. transformer, the H.V.capacitor and H.V.Diode.

1. The AC input voltage 120V 60Hz is rectified to DC voltage immediately.
2. DC voltage will be supplied to the switching devices called IGBT. These devices will be switched ON-OFF by the 20 to 40 kHz PWM. (pulse width modulation) signal from the microcomputer in the DPC.
3. This drives the High voltage transformer to increase up to 2,000V AC and approximately 3V AC by means of transformer.
4. Then the half-wave doubler voltage rectifier circuit, consisting of the H.V. diodes and Capacitors, generates the necessary 4,000V DC needed for the magnetron.
5. Output power of the magnetron tube is always monitored by the signal output from the current transformer built into the inverter circuit.
6. Then this signal will be fed back to the microcomputer in the DPC to determine operating conditions and output necessary to control PWM signal to the inverter Power Supply to control output power.

8.3. Inverter turbo defrost

When this Auto Control feature is selected and the Start Pad is tapped:

1. The digital programer circuit determines the power level and cooking time to complete cooking and indicates the operating state in the display window. Table shows the corresponding cooking times for respective serving by categories.
2. When cooking time the display window has elapsed, the oven turns off automatically by a control signal from the digital programmer circuit.

Inverter Turbo Defrost

SELECTED WEIGHT	COOKING TIME
1.0 oz	5 min.20 sec.

8.4. Sensor cooking (Only for sensor models)

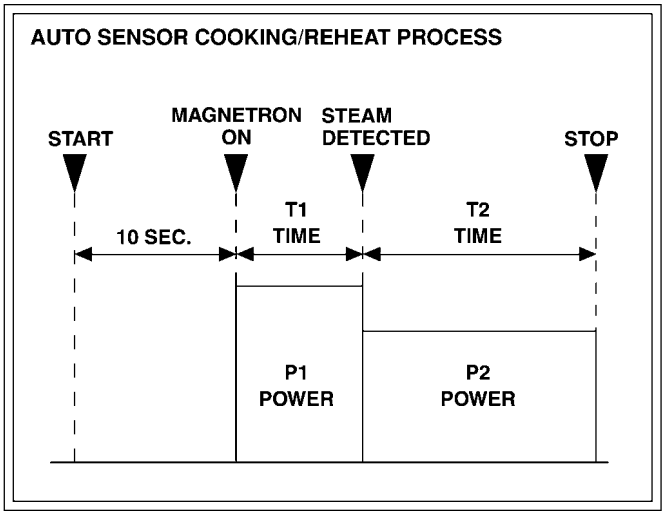
Auto sensor cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time.
All that is necessary is to select an Auto Sensor Program before starting to cook.

Understanding Auto Sensor Cooking

As the food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor Cooking, a carefully designed instrument, called the steam sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program Selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

NOTE:

Auto Sensor Cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using power select and time features. Please consult variable Power Microwave cookbook for procedures.



Explanation of the Auto Sensor Cooking process

1. During the first 10 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 10 seconds is subtracted from the T1 time. In other words T1 time starts at the end of the 10 second period.
2. **T1 time** The total amount of time it takes the microwave oven to switch to T2 time after the 10 second period.
3. **T2 time** When the steam escapes from the cooking container placed in the oven, the steam sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.

   Balance of cooking time (T2 time)

   The balance of cooking time which is called T2 time, can be calculated by the following formula.

   T2 time (in sec.) = T1 time X K factor

NOTE:

Remember, the T1 time starts after the 10 second period. The coefficient K is programmed Into the microprocessor memory and they are listed in the following tables along with the P1 and P2 powers.

NOTE:

When "More" or "Less" pad is selected, the K factor varies resulting in T2 time to be increased or decreased.

Example of calculating the T2 time

Example 1: If the T1 time is measured to be 2 minutes and 40 seconds after the 10 second period, and the Auto program selected is frozen Vegetable:

T2 = T1 X K

= 2 min. and 40 sec. X 0.1

= 160sec. X 0.1

= 16 sec.

Category	P1 Power	P2 Power	K Factor Standard
Frozen Vegetables	HIGH	LOW	0.1

8.5. Sensor reheat (Only for sensor models)

Auto Sensor Reheat is a quick and easy way to reheat refrigerator and room temperature foods.

Simply press the reheat pad. There is no need to select power level and cooking time.

NOTE:

The Auto Sensor Reheat process is same as Auto Sensor Cooking process.

Category	P1 Power	P2 Power	K Factor Standard
Sensor Recheat	HIGH	LOW	0.1

8.6. Steam sensor and digital programmer circuit (Only for sensor models)

In order to determine if the steam sensor function of the digital programmer circuit is working, do the following test.

1. Place a water load (150 cc) in the oven.
2. Tap Sensor Reheat pad.
3. Tap Start Pad.
4. Steam Sensor detects steam about 1.5 to 4 minutes after the Start Pad is tapped.
5. T1 time cooking automatically switches to remaining time cooking (T2).
6. The remaining cooking time (T2) appears in display window. If the following cooking time appears, Steam Sensor function is normal.

T1 TIME	T2 TIME (Remaining cooking time)
1 Min. 30 Sec. ~ 4 Min.	18 Sec. ~ 48 Sec.

9 CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is a high voltage, high current device. It is free from danger in ordinary use, though extreme care should be taken during repair.

Caution

Servicemen should remove their watches whenever working close to or replacing the magnetron.

9.1. Check the grounding

Do not operate on a two wire extension cord. The microwave oven is designed to be grounded when used. It is imperative, therefore, to ensure the appliance is properly grounded before beginning repair work.

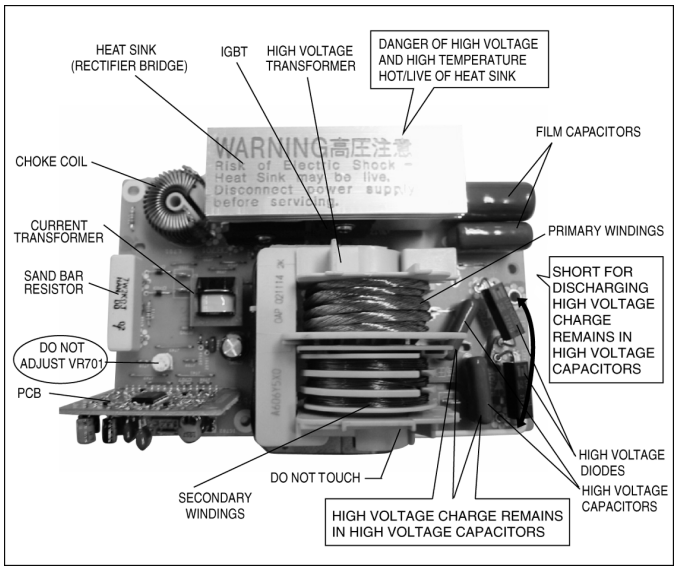
9.2. Inverter warnings

DANGER, HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LINE) OF THE INVERTER POWER SUPPLY (U)

This high voltage inverter power supply handles very high voltage and current for the magnetron tube. Though it is free from danger in ordinary use, extreme care should be taken during repair.

The aluminum heat sink is also energized with high voltage (HOT), so do not touch when the AC input terminals are energized. The power devices Collector is directly connected to the aluminum heat sink.

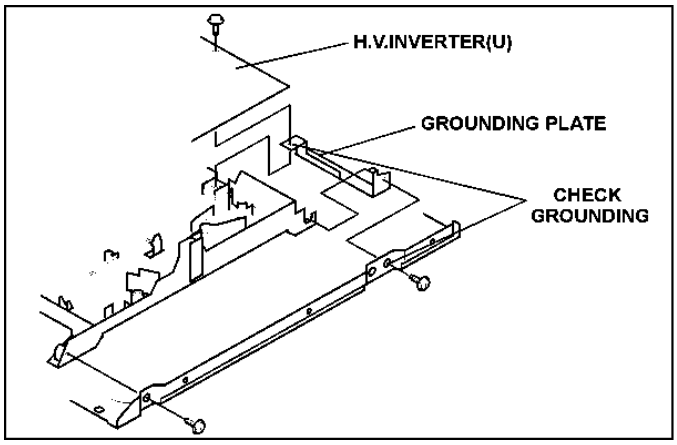
The aluminum heat sink may be HOT due to heat energy, therefore, extreme care should be taken during servicing.



H.V. Inverter warning

WARNING FOR INVERTER POWER SUPPLY (U) GROUNDING

Check the high voltage inverter power supply circuit grounding. The high voltage inverter power supply circuit board must have a proper chassis ground, the inverter grounding bracket must be connected to the chassis. If the inverter board is not grounded it will expose the user to very high voltages and cause extreme DANGER! Be sure that the inverter circuit is properly grounded via the inverter earth bracket.

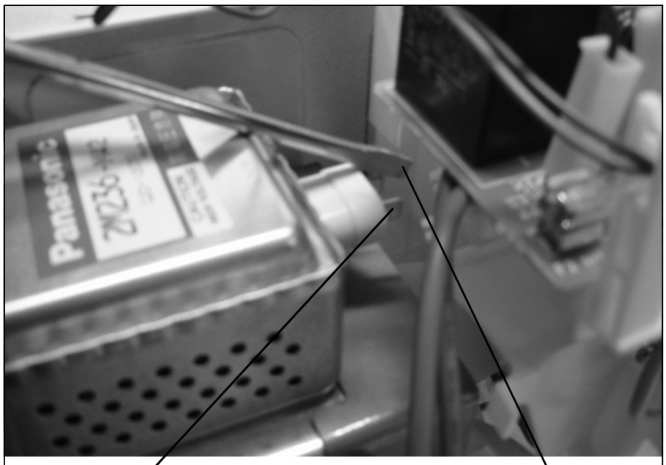


Grounding of the inverter circuit board

WARNING! DISCHARGE THE HIGH VOLATGE CAPACITORS

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors in the inverter power supply circuit board.

When replacing or checking parts, remove the power plug from the outlet and short the inverter output terminal of the magnetron filament terminals to the chassis ground with an insulated handle screwdriver to discharge. Please be sure to touch the chassis ground side first and then short to the output terminals.


MAGNETRON FILAMENT TERMINAL
INSULATED HANDLE SCREWDRIVER
Touch chassis side first then short to the terminal of the magnetron filament terminal.

Discharging the high voltage capacitors

WARNING

There is high voltage present with high current capabilities in the circuits of the primary and secondary windings, choke coil and heat sink of the inverter. It is extremely dangerous to work on or near these circuits with the oven energized. DO NOT measure the voltage in the high voltage circuit including the filament voltage of the magnetron.

WARNING

Never touch any circuit wiring with your hand or with an insulated tool during operation.

9.3. Part replacement.

When any part or component is to be replaced, always ensure that the power cord is removed from the wall outlet.

9.4. When the 18A fuse is blown due to the operation of the short switch:

WARNING

When the 18A 120V fuse is blown due to the operation of the interlock monitor switch, replace all of the components (primary latch switch, door switch, short switch and power relay B (RY1)).

1. This is mandatory. Refer to “adjustments and measurements” for the location of these switches.
2. When replacing the fuse, confirm that it has the appropriate rating for these models.
3. When replacing faulty switches, be sure the mounting tabs are not bent, broken or deficient in their ability to hold the switches.

9.5. Avoid inserting nails, wire etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any holes or gaps, because such objects may work as an antenna and cause microwave leakage.

9.6. Confirm after repair

1. After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. Microwaves might leak if screws are not properly tightened.
2. Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
3. Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage).

CAUTION MICROWAVE RADIATION

USE CAUTION NOT TO BECOME EXPOSED TO RADIATION FROM THE MICROWAVE MAGNETRON OR OTHER PARTS CONDUCTING MICROWAVE ENERGY

IMPORTANT NOTICE

The following components have potentials above 2000V while the appliance is operated.

- Magnetron
- High voltage transformer (Located on inverter (U))
- High voltage diodes (Located on inverter (U))
- High voltage capacitors (Located on inverter (U))

Pay special attention to these areas.

When the appliance is operated with the door hinges or magnetron fixed incorrectly, the microwave leakage can exceed more than 5mW/cm^2. After repair or exchange, it is very important to check if the magnetron and the door hinges are correctly installed.

9.7. Sharp edges

Caution

Please use caution when unpacking, installing or moving the unit, as some exposed edges may be sharp to the touch and cause injury if not handled with care.

10 DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

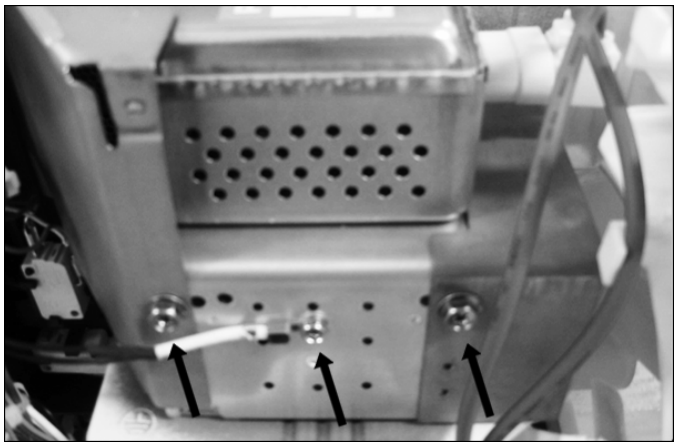
10.1. Magnetron

1. Discharge high voltage charge.
2. Remove 1 screw holding air guide A.
3. Remove 1 screw holding air guide F.
4. Remove 1 screw holding themistor.
5. Disconnect 2 high voltage lead wires from magnetron filament terminals.
6. Remove 4 screws holding the magnetron.

NOTE:

After replacement of the magnetron, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

CAUTION
When replacing the magnetron, be sure the antenna gasket is in place.



10.2. Digital programmer circuit (D.P.C) and membrane key board.

NOTE:

Before handing the D.P.C ensure that your body is connected to ground to discharge any electric charge.

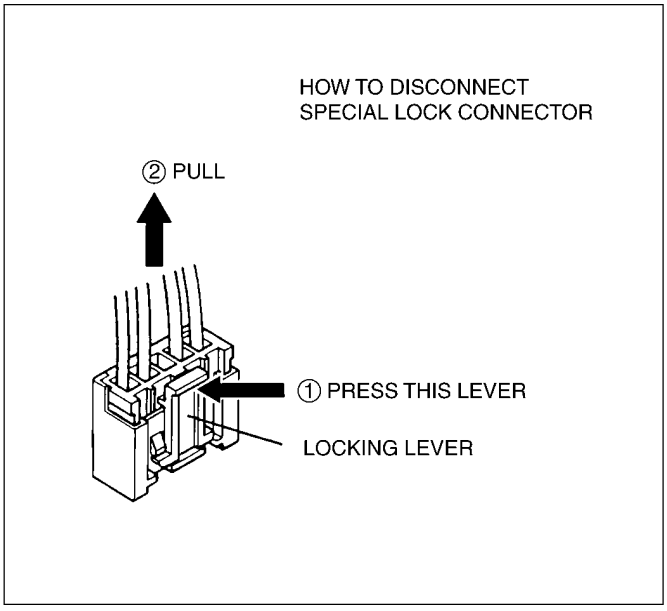
1. Disconnect all connectors from D.P.C.
2. Remove 1 screw holding escutcheon base and slide the escutcheon base upward slightly.
3. Remove 1 screw holding D.P.C.
4. Release lock of connector CN6 by pushing both levels to inside and pull them upward, and remove flat cable of membrane keyboard.
5. Separate D.P.C board from tabs on the escutcheon base and remove D.P.C board.

To replace membrane key board

6. Push the upper part of key board (display window portion) from back of escutcheon base and peel off escutcheon sheet and membrane key board completely from escutcheon base.

NOTE:

1. The membrane key board is attached to the escutcheon base with double faced adhesive tape. Therefore, applying hot air such as using a hair dryer is recommended for smoother removal.
2. When installing new membrane key board, make sure that the surface of escutcheon base is cleaned sufficiently so that any problems (shorted contacts or uneven surface) can be avoided.
3. Alignment position of membrane key board is as follows;
Membrane key board: Right and upper edges
Escutcheon sheet: Right and upper edges



10.3. Low voltage transformer and/or power relays (RY1, RY2)

NOTE:

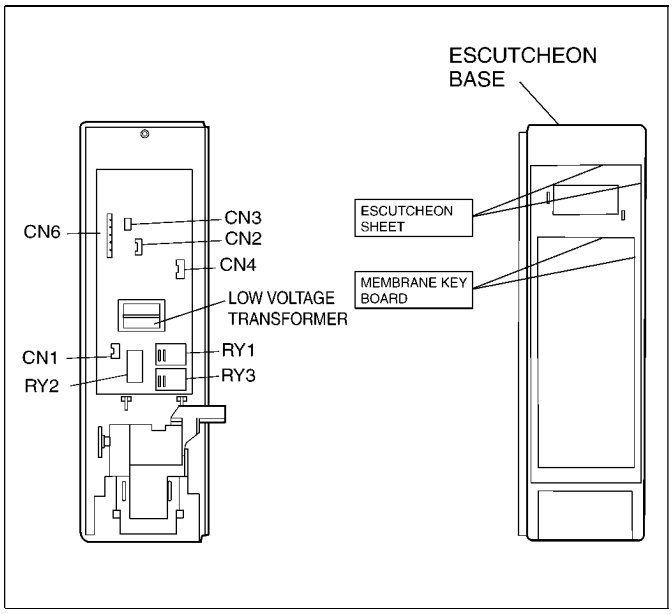
Be sure to ground any static electric charge built up on your body before handling the DPC.

(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.

NOTE:

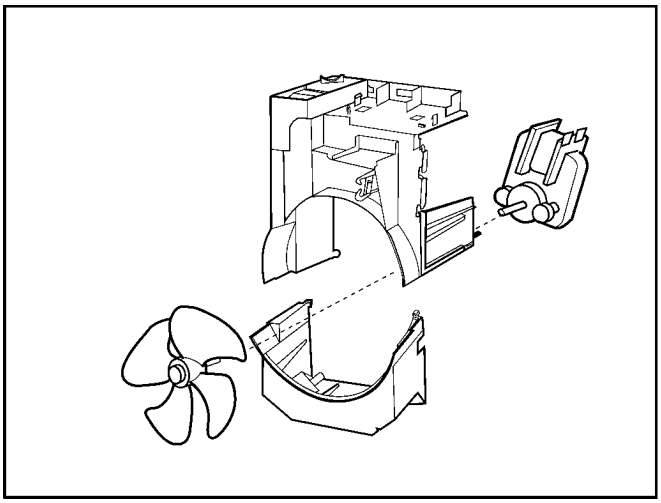
Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.

(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.



10.4. Fan motor

1. Disconnect 2 lead wires from fan motor terminals.
2. Remove 1 screw located on oven attaching orifice assembly.
3. Remove orifice from oven assembly.
4. Remove 2 screws holding fan motor to oven assembly.
5. Remove fan blade from the fan motor shaft by pulling it straight out.



10.5. Door assembly

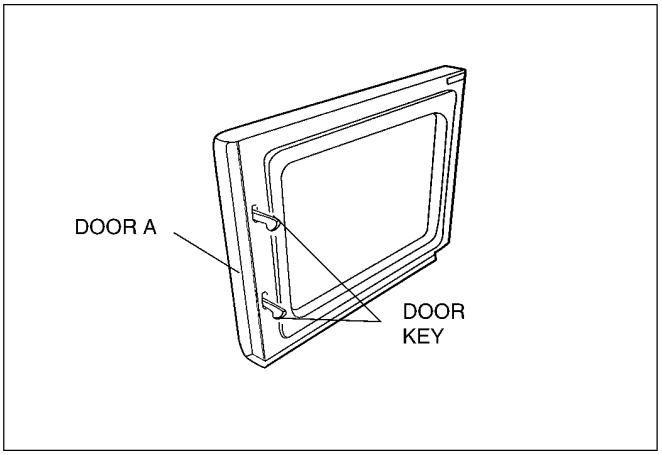
1. Remove door C from door E by carefully pulling outward starting from upper right hand corner using a flat blade screwdriver.
2. Separate door E from tabs on door A and remove door A.
3. Open Door E at the opening angle of approximately 10°**(Note: The door cannot be removed if the opening angle is greater than 10°)**.
4. Remove the door E from its hinges by pushing the door E upward and out.
5. Remove door screen B from door A.
6. Remove door key and door key spring.
7. Place the door´s lower hinge pin into the bottom hinge hole.
8. Use your left index finger to support the door´s lower hinge pin while guiding the door´s upper hinge pin into the top hinge hole.
9. Lower your finger to seat the door onto the hinges.
10. Replace other components.

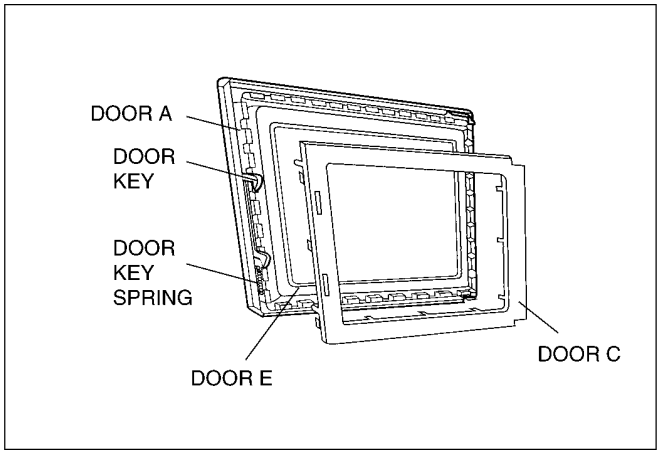
NOTE:

Door alignment is crucial. If door is misaligned, apply pressure until alignment is achieved.

NOTE:

After replacement of the defective component parts of the door, reassemble, install, and perform microwave leakage test.





10.6. Turntable motor

1. Remove the motor cover by cutting at the locations indicated by the arrows with a cutter.

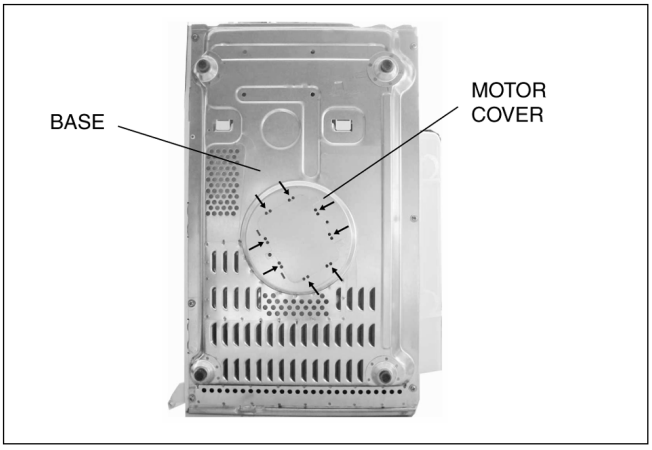
   NOTE:

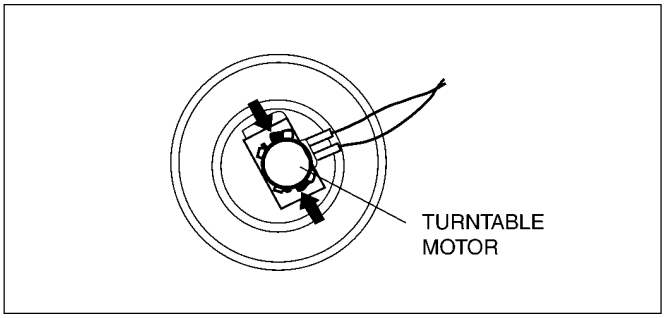
   After removing the motor cover, be sure that cut portions are properly trimmed or bent to the inside so that no sharp edges will be exposed to outside.

2. Disconnect 2 lead wires connected to the turntable motor.
3. Remove the turntable motor by removing screw.

   NOTE:

   After replacing the new turntable motor and reconnecting the two lead wires, reinstall the motor cover by rotating it 180°, tucking the tabs into the base in the 2 provided slots, then screw the single tab to the base using a 4mm X 6mm screw (not provided).



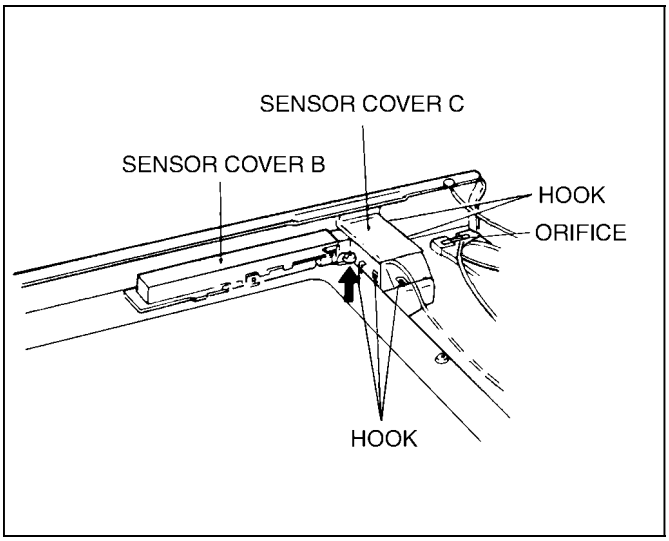


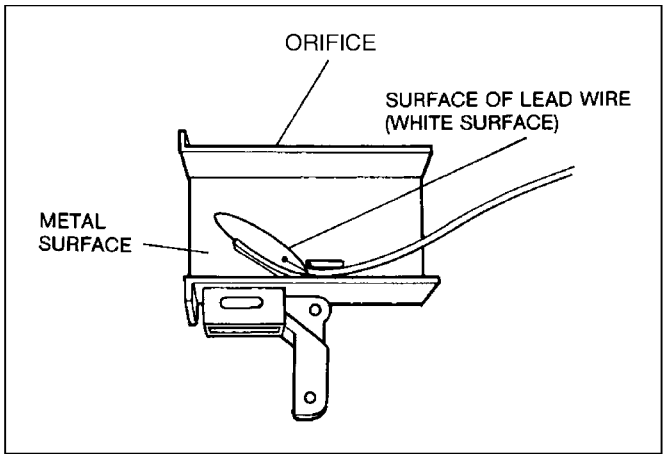
10.7. Steam sensor

1. Disconnect connector CN2 from digital programmer circuit board.
2. Disengage catch hooks on sensor cover c from orifice.
3. Remove steam sensor from orifice.

NOTE:

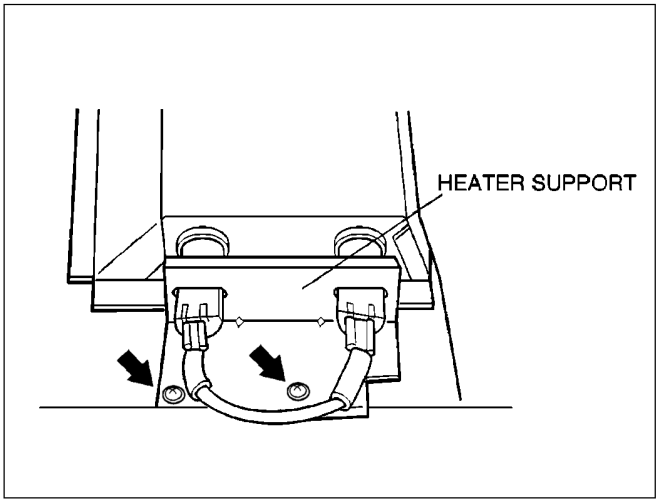
When installing the steam sensor, make sure that the direction of steam sensor is as shown in figure.

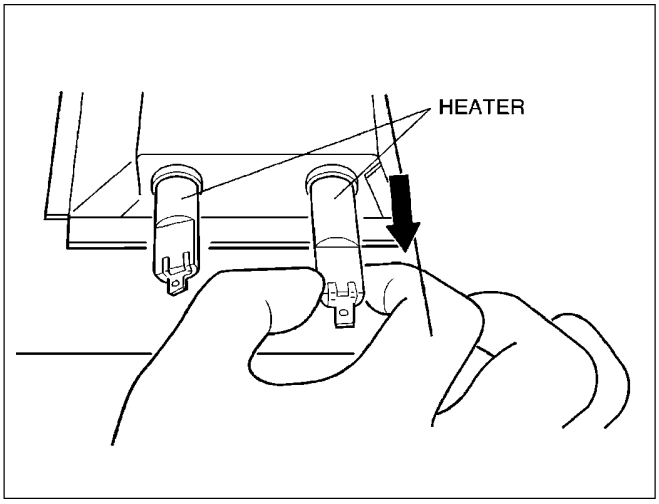




10.8. Quartz heater(For Brown Models)

1. Disconnect lead wires from heater terminals.
2. Remove 2 screws holding heater supports.
3. Remove the heater by pulling it out.





10.9. Inverter power supply

CAUTIONS

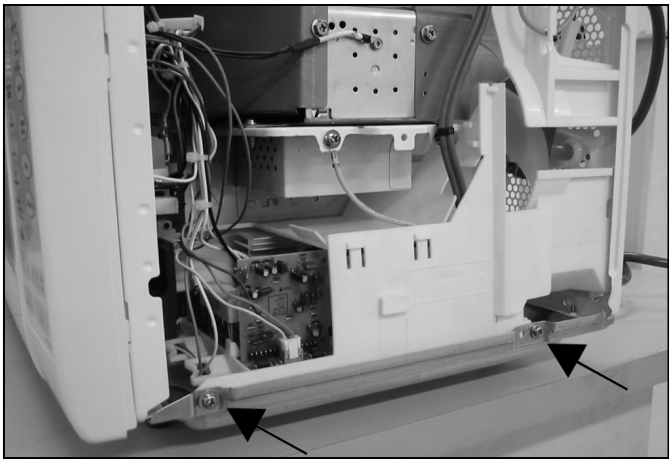
1.Always leave the grounding plate in place.
2.Always securely tighten the ground screw through the bottom of the chassis (base).
3.Securely connect 3 lead wire connectors.
4.Make sure the heat sink has enough space (gap) from the oven. Take special care not to touch any lead wire to the aluminum heat sink because it is hot.

1. Remove cabinet outer panel.

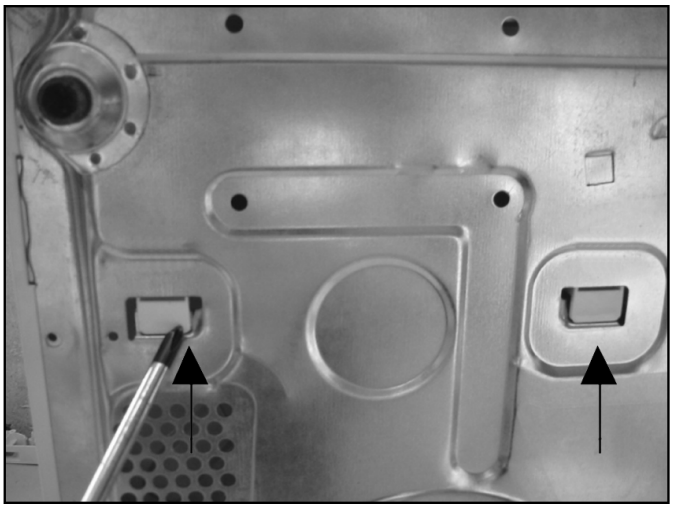
2. Remove the the H.V.lead wire from magnetron terminals.

3. Disconnect 2 connectors from CN701 & CN702 on H.V.Inverter(U).

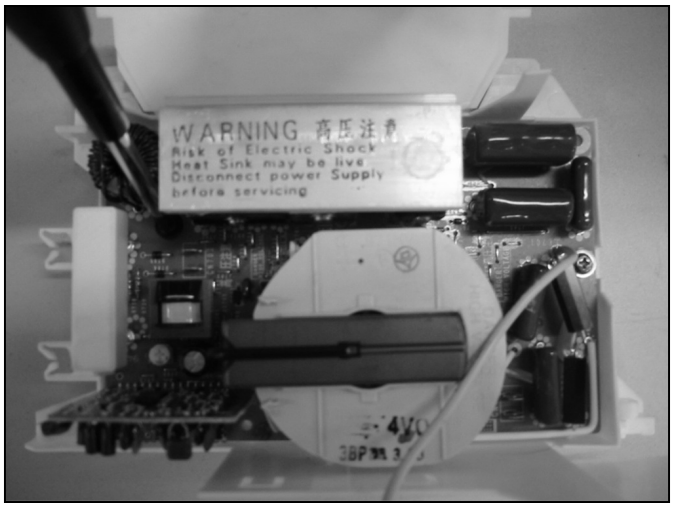
4. Remove 2 screws holding Inverter bracket to the base.



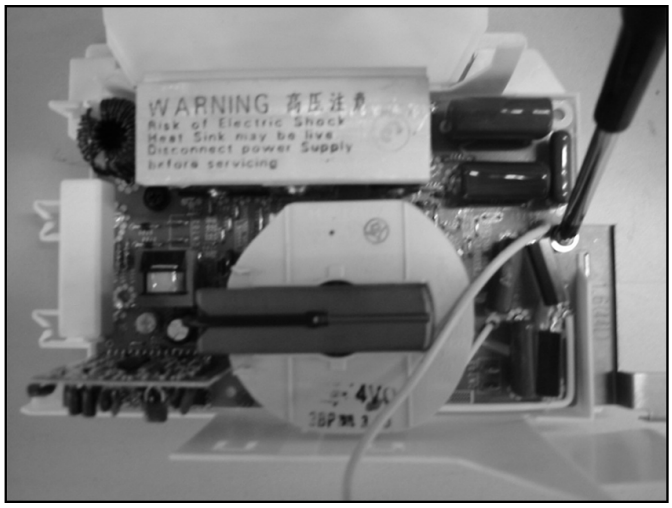
5. Slide 2 locking tabs of Inverter bracket at the bottom of the base in direction of arrows.



6. Remove 1 screw holding H.V.Inverter to Inverter bracket.



7. Remove 1 screw holding grounding plate to H.V.Inverter.



11 COMPONENT TEST PROCEDURE

CAUTION **NEW. H.V.**

1. High voltage is present at the high voltage terminal of the High Voltage Inverter (U) including aluminum heat sink during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitors.

11.1. Primary latch switch (door switch and power relay B) interlocks.

1. Unplug the lead connectors to Power Relay B and verify continuity of the power relay B 1-2 terminals.
2. Unplug lead connectors to Primary Latch Switch and Door Switch.
3. Test the continuity of switches at door opened and closed positions with ohm meter (low scale).
   Normal continuity readings should be as follows.

	Door Closed	Door Opened
Primary Latch Switch	0 Ω (close)	∞ Ω (open)
Door Switch	0 Ω (close)	∞ Ω (open)
Power Relay B	∞ Ω (open)	∞ Ω (open)

11.2. Short switch & monitor

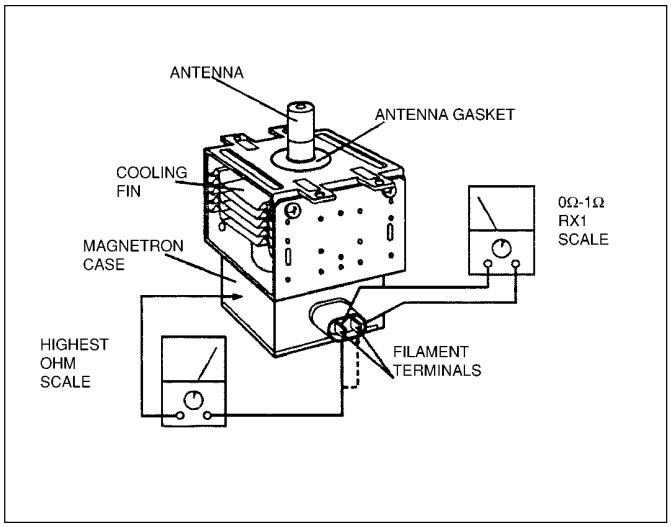
1. Unplug lead wires from Inverter Power Supply (U) primary terminals.
2. Connect test probes of ohm meter to the disconnected leads which were connected to Inverter Power Supply (U).
3. Test the continuity of short switch with door opened and closed positions using lowest scale of the ohm meter.
   Normal continuity readings should be as follows.

Door Opened	Door Closed
0 Ω	∞ Ω

11.3. Magnetron

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.

1. Isolate magnetron from the circuit by disconnecting the leads.
2. A continuity check across magnetron filament terminals should indicate one ohm or less.
3. A continuity check between each filament terminal and magnetron case should read open.

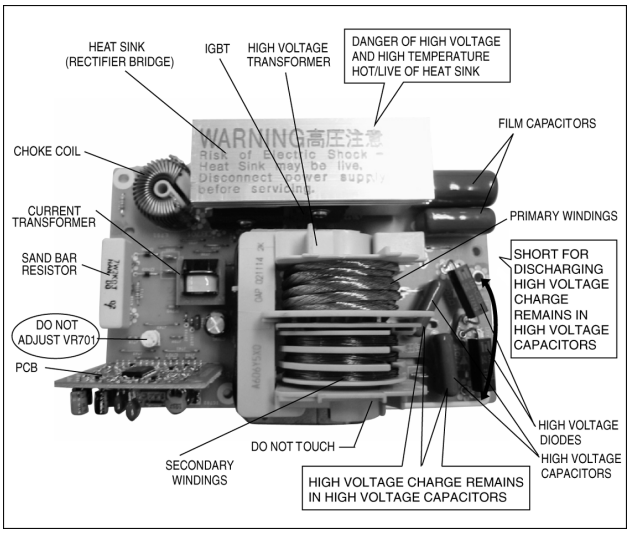


11.4. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in digital programmer circuit.

11.5. Inverter power supply (U)

DO NOT try to REPAIR H.V. Inverter power supply (U).Replace complete H.V. Inverter(U) Unit.



DANGER HIGH VOLTAGE

Test if failure codes of H97 or H98 appear by doing the following procedure. It is recommended to use an AC line input current Ampere meter for testing.

Test1

1. Program DPC.
   a. Tap Clock Keypad
   b. Tap Timer Keypad
   c. Tap Start Keypad
   d. Tap Power Level Keypad
2. Place 1 liter of water load into oven cavity.
3. Unplug 2 pin H.V. lead wire connector CN703 from magnetron tube.
4. Program oven at High power for 1 minute and press start.
   a. After approximately 23 seconds, oven stops.
   b. During oven operation, input current is approximately 0.5 to 1A. If both a and b are OK, proceed to test 2.

	INPUT AMPERE	FAILURE CODE
Unplug CN703	0.5 to 1A	Oven stops in 23 seconds after started.

Test2

Continued from Test 1

1. Unplug 3 pin connector CN701. CN703 remains unplugged.
2. Program oven at High power for 1 minute and press start.
   a. After approximately 3 seconds, oven stops.
   b. During oven operation, input current is approximately 0.4A.

	INPUT AMPERE	FAILURE CODE
Unplug CN701	<0.4A	Oven stops in 3 seconds after started.

If both a and b check OK, the Inverter Power Supply (U) can be determined to be OK.

12 MEASUREMENTS AND ADJUSTMENTS

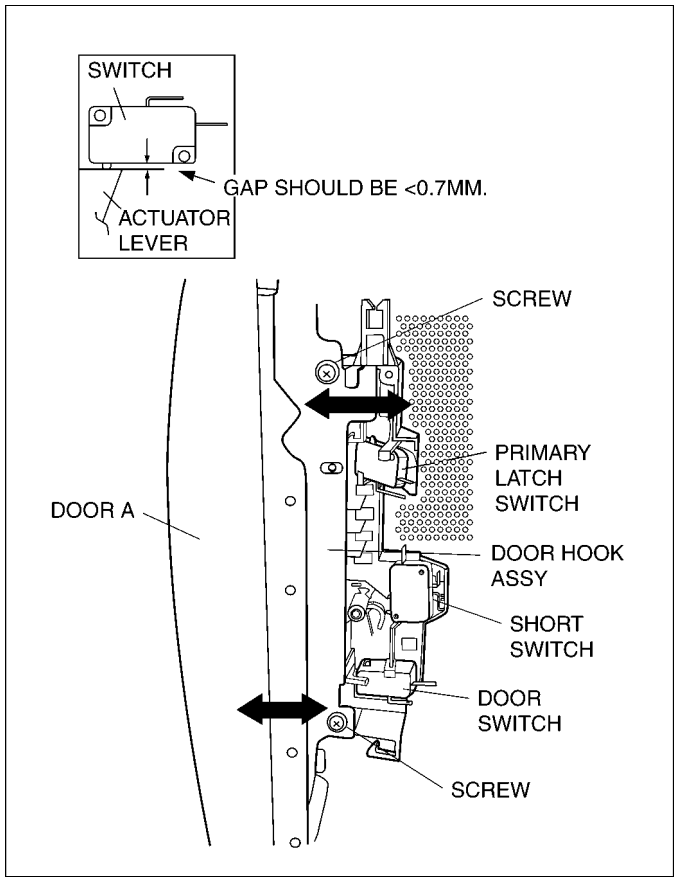
12.1. Adjustment of primary latch switch, door switch and short switch.

1. Mount the Primary latch switch, the door switch and the short switch to the door hook assembly as shown in ILL.

   NOTE:

   No specific individual adjustment during installation of the Primary latch switch, door switch or short switch to the door hook are required.

2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrows in the illustration, so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
3. Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the component test procedures on P.21.



12.2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However,due to the complexity of IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.

Necessary Equipment:

*1 liter beaker *Glass thermometer
*Wrist watch or stopwatch

NOTE:

Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately as possible.

1. Fill the beaker with exactly one liter of tap water.Stir the water using the thermometer and record the water's temperature. (recorded as T1).
2. Place the beaker on the center of glass tray.
   Set the oven for High power and heat it for exactly one minute.
3. Stir the water again and read the temperature of the water. (recorded as T2).
4. The normal temperature rise at High power level for each model, is as shown in table.

TABLE (1L-1min.test)

RATED OUTPUT	TEMPERATURE RISE
1100W(IEC705-88)	Min.16.9°F (9.4°C)
1200W(IEC705-88)	Min.18.5°F (10.3°C)

13 PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

WARNING
Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm^2 (1mW/cm^2 for Canada) inform PASC, PSC, or PCI immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S. and Health and Welfare Canada regulation. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE:

The U.S. Government standard is 5 mW/cm^2 while in the customer's home. 2mW/cm^2 stated here is our own voluntary standard. (1mW/cm^2 for Canada)

13.1. Equipment

- Electromagnatic radiation monitor
- Glass thermometer 212°F or 100°C
- 600cc glass beaker

13.2. Procedure for measuring radiation leakage

Note before measuring.

- Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.
- To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area in Figure no faster than 1 inch/sec (2.5cm/sec).
- Leakage with the outer panel removed ..... less than 5mW/cm^2.
- Leakage for a fully assembled oven with door normally closed ..... less than 2mW/cm^2 (1mW/cm^2 for Canada).
- Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door ..... less than 2mW/cm^2.

1. Pour 275 ± 15cc (9ozs^s± 1/2oz) of 20°C ± 5°C (68° ± 9°F) water in a beaker which is graduated to 600cc, and place in the center of the oven.
2. Set the radiation monitor to 2450MHz and use it following the manufacturer´s recommended test procedure to assure correct results.
3. When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
4. Tap the start pad or set the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

13.2.1. Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.

WARNING
Avoid contacting any high voltage parts.

13.2.2. Measurements with a fully assembled oven.

After all components, including outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

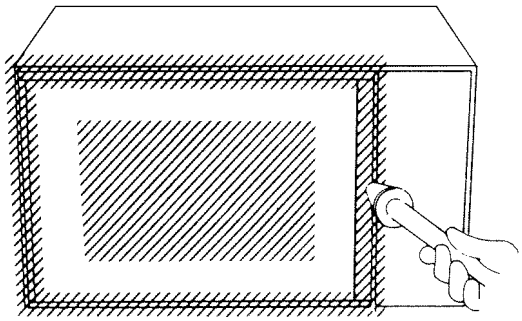
13.3. Record keeping and notification after measurement

- After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.

  A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.
- Should the radiation leakage be more than 2 mW/cm^2 (1mW/cm for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify PASC, PSC or PCI.

13.4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

WARNING
AVOID CONTACTING ANY HIGH VOLTAGE PARTS.



01-035

MOVE PROBE ALONG SHADED AREA(//////)AROUND EXHAUST OPENINGS(as shown)AND AROUND AIR INLET OPENING

14 TROUBLESHOOTING GUIDE

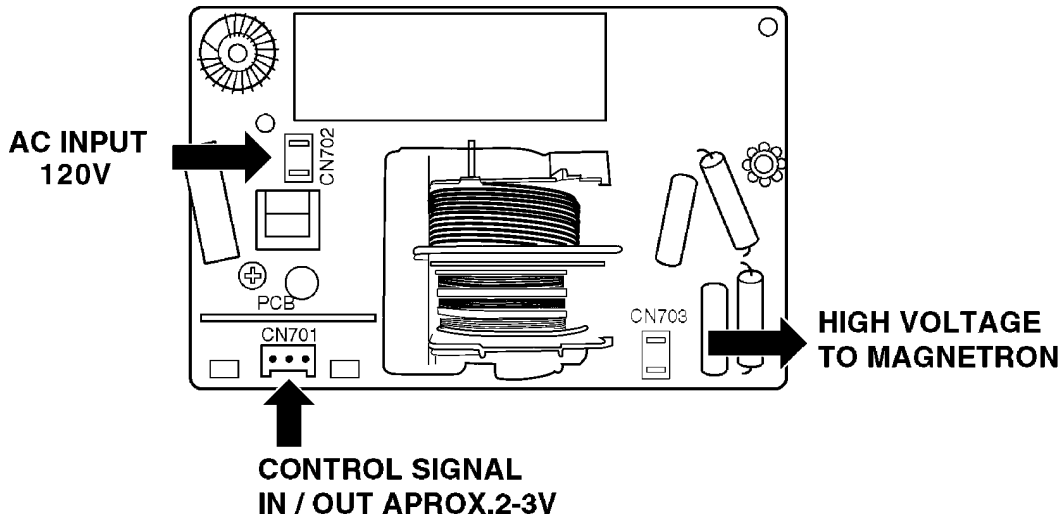
DANGER HIGH VOLTAGES ⚠

1. **DO NOT RE-ADJUST PRESET CONTROL on the H.V.Inverter (U).** It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very large current and high voltage. Operating a misaligned inverter circuit is dangerous.
2. Ensure proper grounding before checking for trouble.
3. Be careful of the high voltage circuitry, taking necessary precautions when troubleshooting.
4. Discharge high voltage remains in the H.V.Inverter (U).
5. When checking the continuity of the switches or the H.V.Inverter, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter. When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be open or the connector cannot be removed.
6. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel. Always touch yourself to ground while working on this panel to discharge any static charge in your body.
7. 120V AC is present on the digital programmer circuit (Terminals of power relay's and primary circuit of Digital Programmer Circuit). When troubleshooting, be cautious of possible electrical shock hazard.

Before troubleshooting, operate the microwave oven following the correct operating procedures in the instruction manual in order to find the exact cause of any trouble, since operator error may be mistaken for the oven's malfunction.

14.1. (Trouble) Oven stops operation during cooking

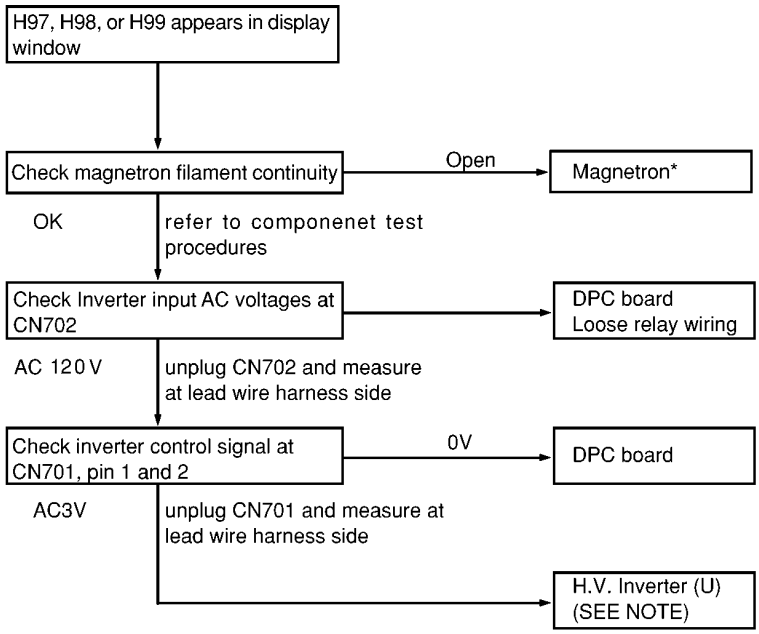
	SYMPTOM	CAUSE	CORRECTIONS
1.	**Oven stops in 3 seconds** after pressing start pad	No 120V AC is supplied to H.V.Inverter (U) CN702 terminals	1. Latch Switch 2. Power relay RY-1 3. Loose lead wire connector CN701, CN702
	Oven stops in 23 seconds after pressing start pad	H.V.Inverter (U) operates by the control signals from DPC but magnetron is not oscillating	1. Magnetron 2. Loose lead wire connector CN703
	Oven stops in 10 seconds after pressing start pad (Auto sensor cooking)	Steam sensor circuit does not function	1. Steam sensor 2. DPC 3. Loose wiring connector CN2
2.	No display and no operation at all. Fuse is blown.	Most probably loose connection of connectors or door latch mechanism is not adjusted properly	1. Allign door, Door Latch Switches 2. Loose wiring connectors



	SYMPTOM	CAUSE	CORRECTIONS
1.	Oven is dead. Fuse is OK. No display and no operation at all.	1. Open or loose lead wire harness 2. Open thermal cutout 3. Open low voltage transformer 4. Defective DPC	Check fan motor if thermal cutout is defective.
2.	No display and no operation at all. Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switch (NOTE 1) 3. Defective short switch (NOTE 1) 4. Defective Inverter Power Supply (U)	Check adjustment of primary, secondary latch switch and short switch including door.
		NOTE 1: All of these switches must be replaced at the same time. Check continuity of power relay B (RY-1)´s contacts (between 1 and 2) and if it has continuity, replace power relay B (RY-1) also.	
3.	Oven does not accept key input(Program)	1. Key input is not in sequence 2. Open or loose connection of membrane key pad to DPC (Flat cable) 3. Shorted or open membrane key board 4. Defective DPC	Refer to operation procedure. Refer to DPC troubleshooting.
4.	Fan motor turns on when oven is plugged in with door closed.	1. Misadjustment or loose wiring of secondary latch switch 2. Defective secondary latch switch	Adjust door and latch switches.
5.	Timer starts count down but no microwave oscillation. (No heat while oven lamp and fan motor turn on)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to have lower output and/or have intermittent. 3. Defective high voltage component H.V. Inverter Power Supply (u) Magnetron 4. Open or loose wiring of power relay B (RY-1) 5. Defective primary latch switch 6. Defective DPC or power relay B (RY-1)	Adjust door and latch switches. Check high voltage component according to component test procedure and replace if it is defective. Refer to DPC troubleshooting
6.	Oven can program but timer does not start countdown.	1. Open or loose wiring of secondary latch switch 2. Off-alignment of secondary latch switch 3. Defective secondary latch switch	
7.	Microwave output is low. Oven takes longer time to cook food.	1. Decrease in power source voltage 2. Open or loose wiring of magnetron filament circuit.(Intermittent oscillation) 3. Aging change of magnetron	Consult electrician
8.	Fan motor turns on and turntable rotates when door is opened.	1. Shorted primary latch switch	
9.	Oven does not operate and return to plugged in mode as soon as start pad is pressed.	1. Defective DPC	Check tighten screws on escutcheon base bracket, D.P.C. board.
10.	Loud buzzing noise can be heard.	1. Loose fan and fan motor	
11.	Turntable motor does not rotate.	1. Open or loose wiring of turntable motor 2. Defective turntable motor	
12.	Oven stops operation during cooking.	1. Open or loose wiring of primary and secondary latch switch 2. Operation of thermal cutout	Adjust door and latch switches.
13.	Oven returns to plugged in mode after 10 seconds elapses on the Auto sensor cooking mode.	1. Open or loose wiring of sensor terminal from DPC 2. Open steam sensor 3. Defective DPC	

14.2. Troubleshooting of inverter circuit (U) and magnetron NEW H.V.

This oven is programmed with a self diagnostics failure code system which will help for troubleshooting. H97, H98, and H99 are the provided failure codes to indicate magnetron and inverter circuit problem areas. This section explains failure codes of H97, H98, and H99. First, you must program the DPC by pressing Clock , Timer , Start , Power Level . Program unit for operation. H97, H98, H99 appears in display window a short time after start key is pressed and there is no microwave oscillation.


H97, H98, or H99 appears in display window
Check magnetron filament continuity
Open
Magnetron*
OK
refer to componenet test procedures
Check Inverter input AC voltages at CN702
DPC board
Loose relay wiring
AC 120 V
unplug CN702 and measure at lead wire harness side
Check inverter control signal at CN701, pin 1 and 2
0V
DPC board
AC3V
unplug CN701 and measure at lead wire harness side
H.V. Inverter (U) (SEE NOTE)

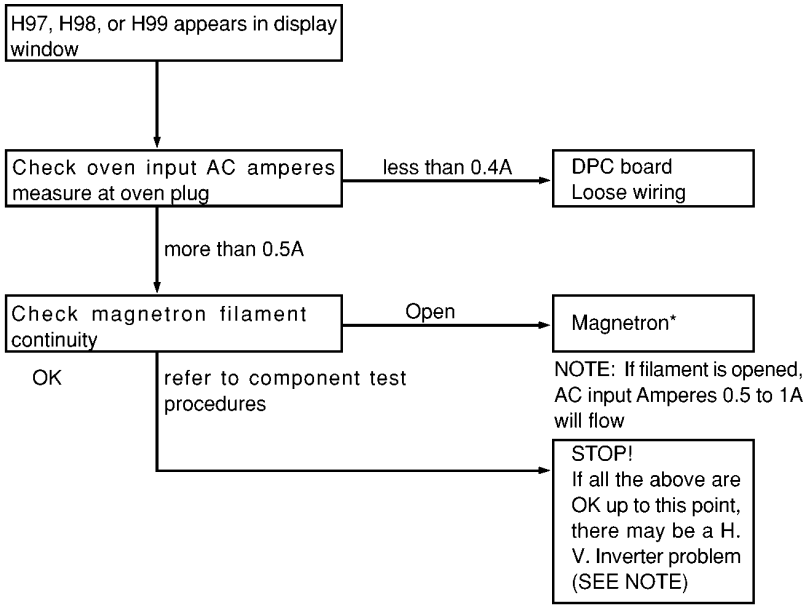
NOTE: DO NOT try to repair this Inverter Power Supply (U) and also DO NOT RE-ADJUST PRESET CONTROL on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

* Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

NOTE: After check, unplug unit to reset to normal operation mode.

Alternate way to troubleshoot oven with AC Ampere meter used

H97, H98, H99 appears in display window a short time after start key is pressed and no microwave oscillation with AC Ampere meter used for troubleshooting


H97, H98, or H99 appears in display window
Check oven input AC amperes measure at oven plug
less than 0.4A
DPC board
Loose wiring
more than 0.5A
Check magnetron filament continuity
Open
Magnetron*
OK
refer to component test procedures
NOTE: If filament is opened, AC input Amperes 0.5 to 1A will flow
STOP!
If all the above are OK up to this point, there may be a H. V. Inverter problem (SEE NOTE)

NOTE: DO NOT try to repair this Inverter Power Supply (U) and also DO NOT RE-ADJUST PRESET CONTROL on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

* Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

NOTE: After check, unplug unit to reset to normal operation mode.

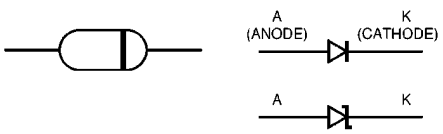
14.3. Digital programmer circuit troubleshooting guide

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in. Oven is dead.	1	Fuse pattern of DPC	Normal	STEP 2
			Open (NOTE)	Shorted Circuit of ZNR,L.V.T., Oven Lamp etc.Replace DPC
	2	Low voltage transformer (LVT) secondary voltage	Abnormal 0V	LVT
			Normal	→ Step 3
	3	IC-1 pin 16 voltage (Emitter of Q11)	Abnormal	ZD11, Q11
			Normal = 5V	Display
NOTE **Procedure of fuse pattern repairing is as follows:** **1. When the fuse pattern (PF2) opens.** (1) Remove the jumper wire (PF1). (2) Insert the removed jumper wire (PF1) to "(PF2)" position and solder it. If both "PF1" and "PF2" fuse patterns are open, replace DPC. **2. When the fuse pattern (PF4) opens.** (1) Remove the jumper wire (PF3). (2) Insert the removed jumper wire (PF3) to "(PF4)" position and solder it. If both "PF3" and "PF4" fuse patterns are open, replace DPC. NOTE:* At the time of these repairs, make visual inspection of the varistor for burning damage and examine the transformer with tester for the presence of layer short-circuit (check primary coil resistance). If any abnormal condition is detected, replace the defective parts.				
No key input	1	Membrane switch continuity	Abnormal	Membrane switch
			Normal	IC-1
No beep sound	1	IC-1 pin 29 voltage	Abnormal	IC-1
			Normal	BZ, Q224
Power relay A(RY-2) does not turn on even though the program has been set and the start pad is tapped	1	IC-1 pin 9 voltage while operation	Abnormal	IC-1
			Normal = 5V	→ Step 2
	2	Short circuit between collector and Emitter of Q223.	Still does not turn on	RY-2
			RY-2 turns on	Q223
No microwave oscillation at any power setting	1	IC-1 pin 7 and pin 34 voltages while operation at high power	Abnormal	IC-1
			Normal 7---5V	→ Step 2
	2	Q220 transistor	Abnormal	Q220
			Normal	RY-1
Dark or unclear display	1	Replace display and check operation	Normal	DISPLAY
			Abnormal	IC-1
Missing or lighting of incorrect segment	1	Replace IC-1 and check operation	Normal	IC-1
			Abnormal	DISPLAY
H97/H98 appears in window and oven stops operation. Program High power for 1 minute and conduct following test quickly, unless H97/H98 appears and oven stops. NEW H.V.	1	Unplug CN702(2 pin) connector and measure voltage between terminals	0V	1. Latch Switch 2. DPC/Power Relay
			AC line voltage of 120V	→ Step 2
	2	Unplug CN701(3 pin) connector and measure pin 1 voltage	0V	DPC
			Approx. AC 3V	Magnetron

CONTINUED FOR SENSOR MODELS				
Auto sensor cooking does not operate normally. (Steam Sensor cooking does not detect steam from foods.)	1	Steam sensor terminal voltage by using high impedance tester (20k Ω/ V),while breathing on metal surface of sensor	Abnormal = 0V	Steam sensor
			Normal>10-30mV	IC-1

14.4. How to check the semiconductors using an OHM meter

Diode



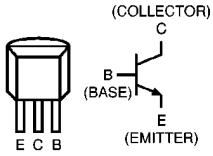
	FORWARD	REVERSE
A-K	SMALL	∞

Transistor

NPN Transistor

2SC·····

2SD·····

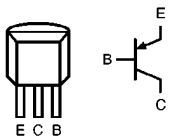


	FORWARD	REVERSE
B-E	SMALL	∞
B-C	SMALL	∞
C-E	∞	∞

PNP Transistor

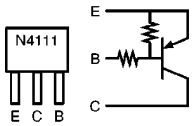
2SA·····

2SB·····



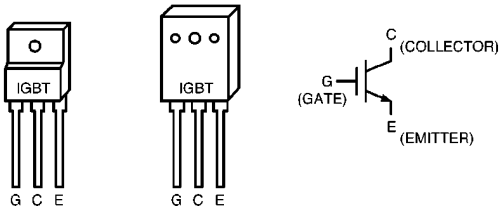
	FORWARD	REVERSE
B-E	SMALL	∞
C-B	SMALL	∞
C-E	∞	∞

Digital Transistor
PNP Transistor



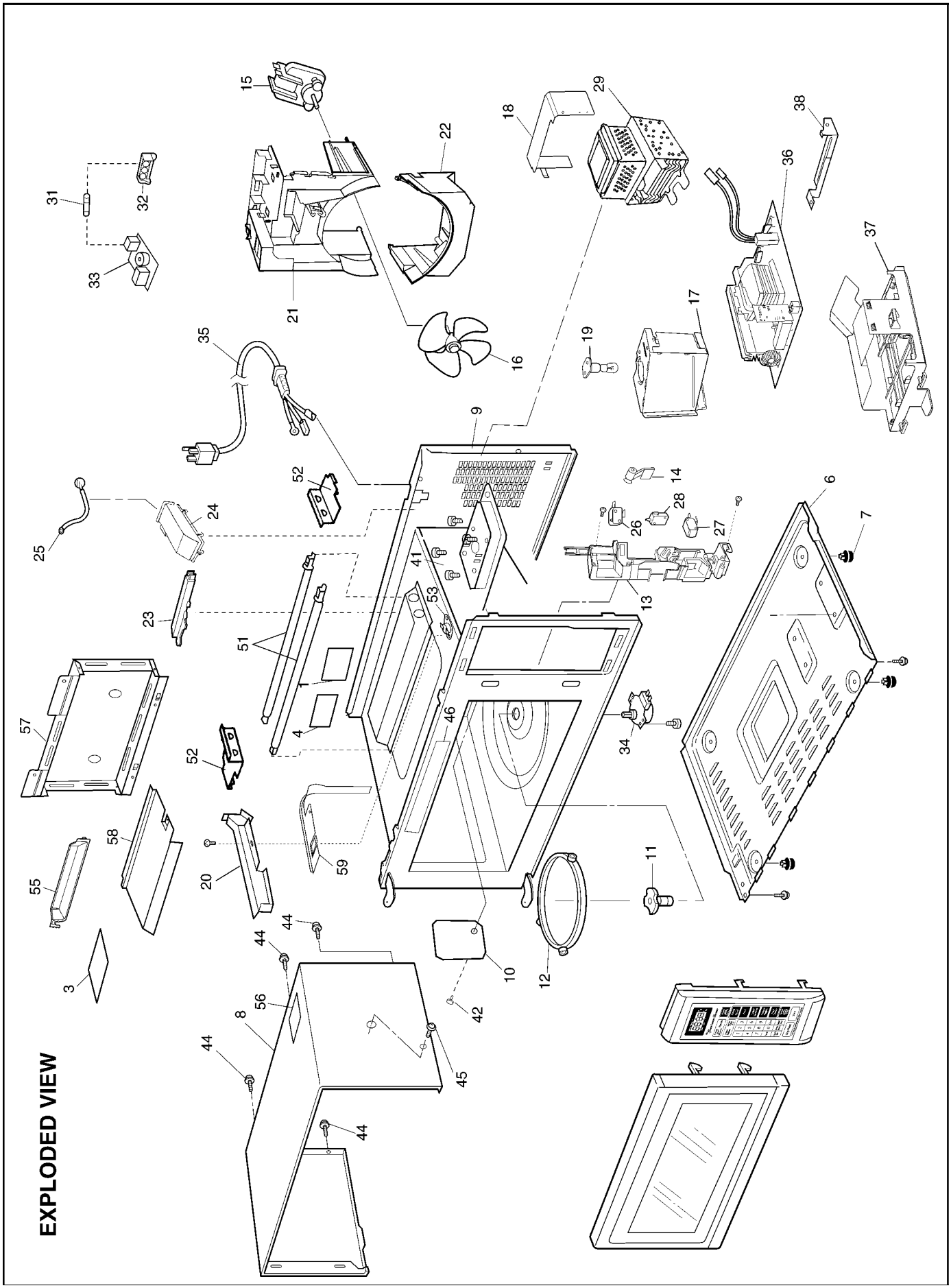
	FORWARD	REVERSE
E-B	10kΩ ~ 30kΩ	10kΩ ~ 30kΩ
C-B	50kΩ ~ 90kΩ	∞
C-E	40kΩ ~ 80kΩ	∞

IGBT
(INSULATED GATE BIPOLAR TRANSISTOR)



	FORWARD	REVERSE
E-C	SMALL	∞
E-G	∞	∞
C-G	∞	∞

15 EXPLODED VIEW AND PARTS LIST



16 PARTS LIST

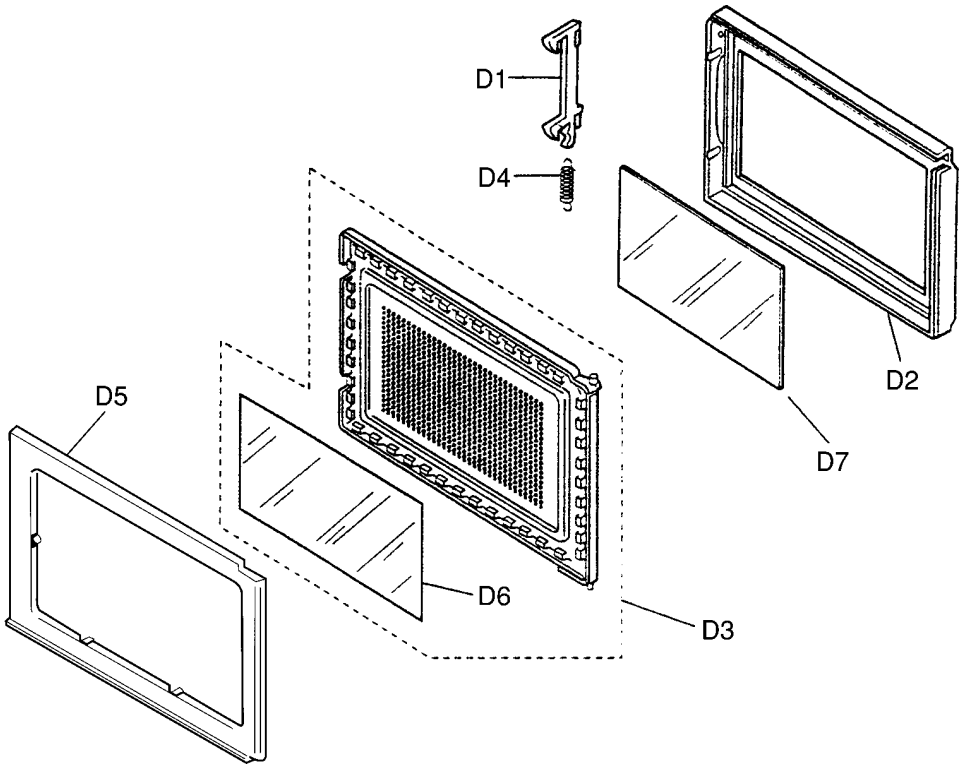
NOTE:

1. When ordering replacement part(s), please use part number(s) shown in this part list.
   Do not use description of the part.
2. Important safety notice:
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacture's specified parts.

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
1		F00069660AP	CAUTION LABEL	1	APH, RPH
1		F00067600CP	CAUTION LABEL	1	CPH
3		F00335Q00AP	FUSE LABEL	1	
4		F00075R00SAP	NAME PLATE	1	G463MF APH
4		F00075R00HAP	NAME PLATE	1	G463WF APH
4		F00075Q00BAP	NAME PLATE	1	S443BF APH
4		F00075Q00HAP	NAME PLATE	1	S443WF APH
4		F00075P90BAP	NAME PLATE	1	S423BF APH
4		F00075P90HAP	NAME PLATE	1	S423WF APH
4		F00075R00SRP	NAME PLATE	1	G463MF RPH
4		F00075Q20HRP	NAME PLATE	1	413WF RPH
6		F10015Q00AP	BASE	1	
7		F10084T00AP	RUBBER FOOT	4	
8		F110D5R00SAP	CABINET BODY	1	G463MF/MM
8		F110D5R00HAP	CABINET BODY	1	G463WF
8		F110D5Q00BAP	CABINET BODY	1	S***BF
8		F110D5Q00HAP	CABINET BODY	1	S***WF, 413WF RPH
8		F110D5Q00SAP	CABINET BODY	1	S413MF CPH
9	⚠	F200A5R00AP	OVEN	1	G463 MF/WF APH, G463MF/MM RPH
9	⚠	F200A5R50CP	OVEN	1	G463 WF CPH
9	⚠	F200A5Q00AP	OVEN	1	S443BF/WF APH
9	⚠	F200A5Q30BP	OVEN	1	S423BF/WF APH, S413MF/WF CPH, 413WF RPH
10		F20555Q00AP	COVER	1	
11		F21315Y00AP	PULLY SHAFT	1	G463 APH/RPH
11		F21314Y00XN	PULLY SHAFT	1	EXCEPT G463 APH/RPH
12		F290D5R00AP	ROLLER RING (U)	1	G463 APH/RPH
12		F290D5Q00AP	ROLLER RING (U)	1	EXCEPT G463 APH/RPH
13	⚠	F30205Q00AP	DOOR HOOK	1	
14		F31365Q00AP	HOOK LEVER A	1	
15		F400A5G60AP	FAN MOTOR	1	
16		F40085G10XN	FAN BLADE	1	
17		F40255Q00AP	AIR GUIDE A	1	
18		F40425Q00AP	AIR GUIDE F	1	
19		F612E5G40AP	INCANDESCENT LAMP (U)	1	
20		F40315R00AP	AIR GUIDE C	1	G463MF/WF APH
21		F41445Q00AP	UPPER ORIFICE	1	
22		F42095Q00AP	LOWER ORIFICE	1	
23		F64505Q00AP	SENSOR COVER B	1	G463 APH/CPH/RPH, S443 APH
24		F65434W00AP	SENSOR COVER C	1	G463 APH/CPH/RPH, S443 APH
25		A607S4T00AP	STEAM SENSOR	1	G463 APH/CPH/RPH, S443 APH
26	⚠	J61415G10XN	MICRO SWITCH	1	V-15G-3C25 (PRIMARY LATCH SWITCH)
27	⚠	F61415U30XN	MICRO SWITCH	1	KW3-0D-A(474) (SECONDARY LATCH SWITCH)
28	⚠	F61785U30XN	MICRO SWITCH	1	KW3-0T-A(375) (SHORT SWITCH)
29	⚠	2M261-M32F	MAGNETRON	1	APH, RPH
29	⚠	2M261-M32G	MAGNETRON	1	CPH
31	⚠	B62308250AP	FUSE	1	18A, 125V
32		F62315G10XN	FUSE HOLDER	1	APH, RPH
33		J692Y4T00CP	NOISE FILTER (U)	1	CPH
34		F63265G60AP	TURNTABLE MOTOR	1	
35	⚠	F900C4T00AP	AC CORD W/PLUG	1	APH, RPH
35	⚠	F900C5Q00CP	AC CORD W/PLUG	1	CPH
36		A606Y5X00AP	H.V.INVERTER (U)	1	
37		F65855Q00AP	INVERTER BRACKET	1	
38		F66625Q00AP	GROUNDING PLATE	1	

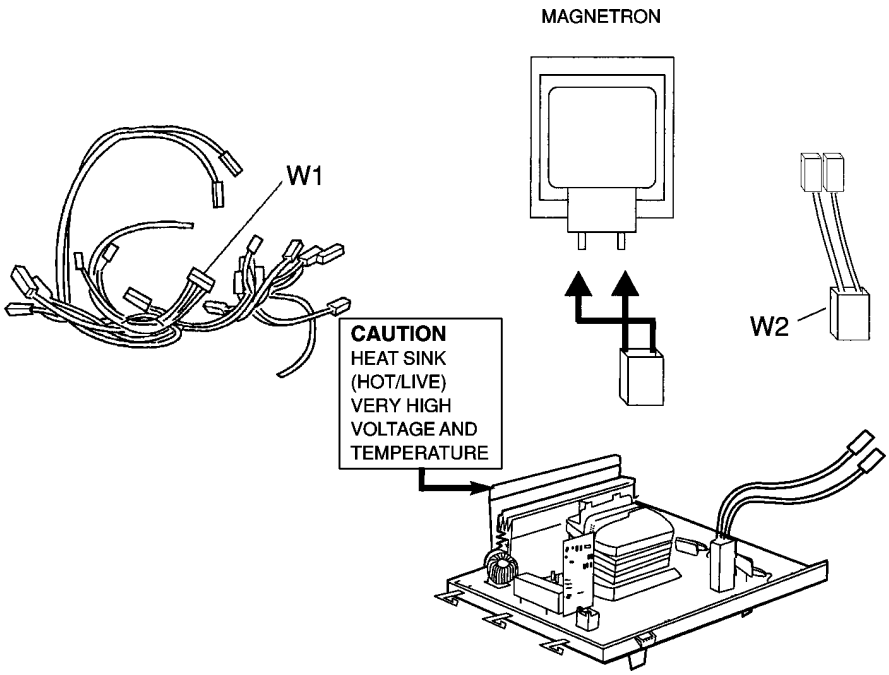
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
41		XTWFA4+12T	SCREW	4	FOR MAGNETRON
42		XTTFNE4+6BN	SCREW	1	FOR COVER
44		XTTAFE4T12A0	SCREW	4	FOR CABINET BODY
45		XTCAFA4+12AFK	SCREW	1	FOR CABINET BODY SIDE (S***BF)
45		XTCAFA4+12AFW	SCREW	1	FOR CABINET BODY SIDE (G463WF, S***WF, 413WF)
45		XTCAFA4+12AFS	SCREW	1	FOR CABINET BODY SIDE (G463MF/MM, S***MF)
46		F03345R00AP	MENU LABEL	1	G463MF/WF APH
46		F03345Y70AP	MENU LABEL	1	S443BF/WF APH, S423BF/WF APH
46		F03345R50CP	MENU LABEL	1	G463WF CPH
46		F03345R00RP	MENU LABEL	1	G463MF/MM RPH
51		F630G5R00AP	HEATER (AU)	2	G463 APH/CPH/RPH (550W, 60V)
52		F64605R00BP	HEATER MOUNTING PLATE	2	G463 APH/CPH/RPH
53		F61455G60XN	THERMAL CUTOUT	1	CPH
55		F40245R00AP	EXHAUST GUIDE A	1	G463 APH/CPH/RPH
56		F01504Y00XN	NO TOUCHING LABEL	1	G463 APH/CPH/RPH
57		F10585R00AP	BACK PLATE COVER	1	G463MF/WF APH
58		F22175R00AP	INSULATION PLATE	1	G463MF/WF APH
59		F62865Q00BP	HEAT SHIELD	1	CPH

17 DOOR ASSEMBLY



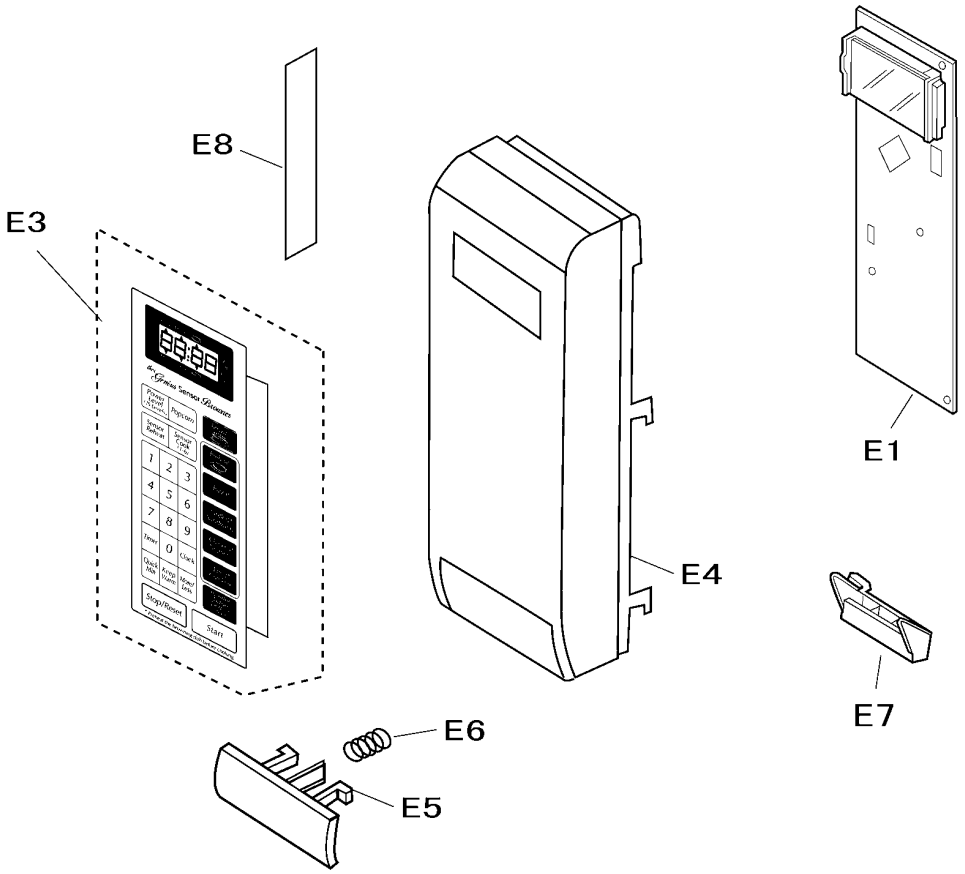
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
D1		F30185Q00AP	DOOR KEY A	1	
D2	⚠	F30015Q00BAP	DOOR A	1	S***BF
D2	⚠	F30015Q00HAP	DOOR A	1	G463WF, S***WF, 413WF
D2	⚠	F30015Q00SAP	DOOR A	1	G463MF/MM, S***MF
D3	⚠	F301P5R00AP	DOOR E (U)	1	G463 APH/CPH/RPH
D3	⚠	F302K5Q00AP	DOOR E (U)	1	EXCEPT G463 APH/CPH/RPH
D4		F30215G10XN	DOOR KEY SPRING	1	
D5	⚠	F30855Q00AP	DOOR C	1	
D6	⚠	F31454T00AP	DOOR SCREEN A	1	EXCEPT G463 APH/CPH/RPH
D7		F31465Q00BAP	DOOR SCREEN B	1	G463MF/MM, S***BF, S***MF
D7		F31465Q00HAP	DOOR SCREEN B	1	G463WF, S***WF, 413WF

18 WIRING MATERIALS



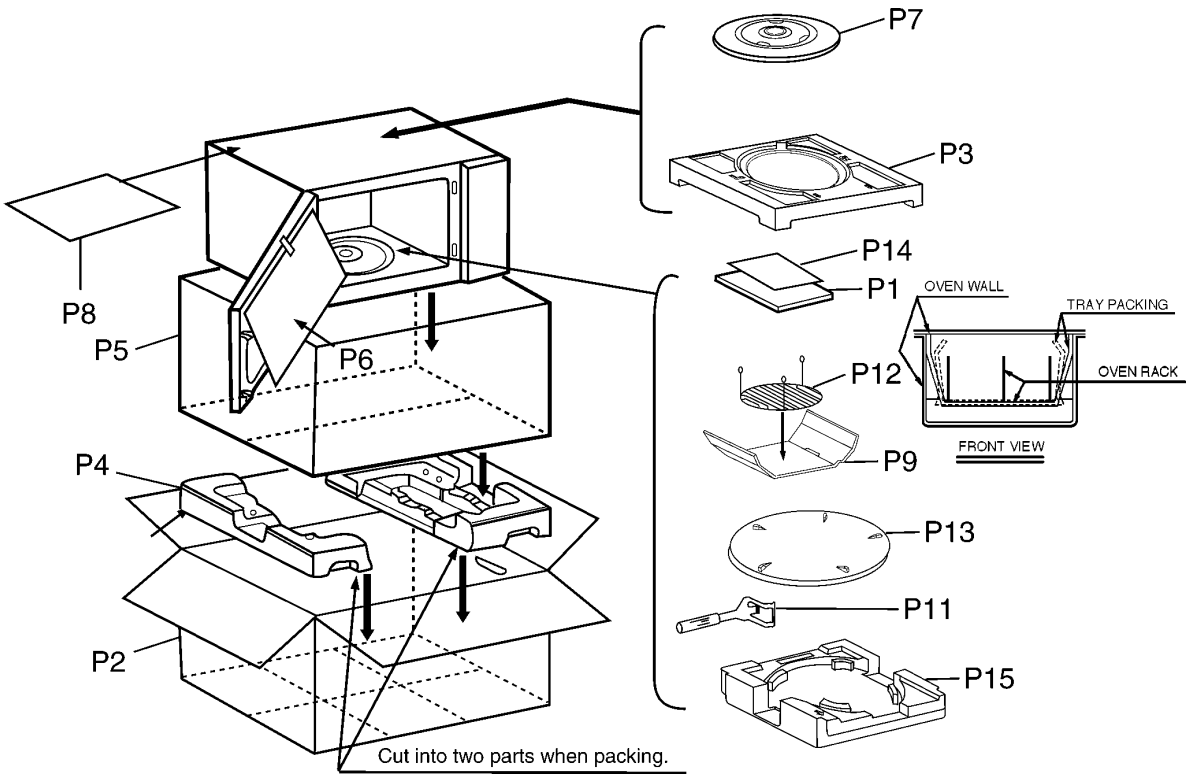
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
W1		F030A5Q00AP	LEAD WIRE HARNESS	1	APH, RPH
W1		F030A5R00CP	LEAD WIRE HARNESS	1	G463 CPH
W1		F030A5Q00CP	LEAD WIRE HARNESS	1	S413 CPH
W2		F030E5Q00AP	H.V.LEAD WIRE	1	

19 ESCUTCHEON BASE ASSEMBLY



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
E1		F603L5R00AP	D.P.CIRCUIT	1	G463MF/WF APH
E1		F603L5Q00AP	D.P.CIRCUIT	1	S443BF/WF APH
E1		F603L5P90AP	D.P.CIRCUIT	1	S423BF/WF APH
E1		F603L5R50CP	D.P.CIRCUIT	1	G463WF CPH
E1		F603L5Q10CP	D.P.CIRCUIT	1	S413MF/WF CPH
E1		F603L5R00RP	D.P.CIRCUIT	1	G463MF RPH
E1		F603L5Q20RP	D.P.CIRCUIT	1	413WF RPH
E3		F630Y5R00SAP	MEMBRANE SWITCH (U)	1	G463MF APH
E3		F630Y5R20HAP	MEMBRANE SWITCH (U)	1	G463WF APH
E3		F630Y5R00HAP	MEMBRANE SWITCH (U)	1	G463WF CPH
E3		F630Y5Q00BAP	MEMBRANE SWITCH (U)	1	S443BF APH
E3		F630Y5Q00HAP	MEMBRANE SWITCH (U)	1	S443WF APH
E3		F630Y5P90BAP	MEMBRANE SWITCH (U)	1	S423BF APH
E3		F630Y5P90HAP	MEMBRANE SWITCH (U)	1	S423WF APH
E3		F630Y5Q10SCP	MEMBRANE SWITCH (U)	1	S413MF CPH
E3		F630Y5Q10HCP	MEMBRANE SWITCH (U)	1	S413WF CPH
E3		F630Y5R00SRP	MEMBRANE SWITCH (U)	1	G463MF/MM RPH
E3		F630Y5Q20HRP	MEMBRANE SWITCH (U)	1	413WF RPH
E4		F80345Q00BAP	ESCUTCHEON BASE	1	S***BF
E4		F80345Q00HAP	ESCUTCHEON BASE	1	G463WF, S***WF, 413WF
E4		F80345Q00SAP	ESCUTCHEON BASE	1	G463MF/MM, S***MF
E5		F80725Q00BAP	DOOR OPENING BUTTON	1	S***BF
E5		F80725Q00HAP	DOOR OPENING BUTTON	1	G463WF, S***WF, 413WF
E5		F80725Q00SAP	DOOR OPENING BUTTON	1	G463MF/MM, S***MF
E6		F80375K00AP	COOK BUTTON SPRING	1	
E7		F82565Q00AP	DOOR OPENING LEVEL	1	
E8		F00075R50HCP	NAME PLATE	1	G463WF CPH
E8		F00075Q10SCP	NAME PLATE	1	S413MF CPH
E8		F00075Q10HCP	NAME PLATE	1	S413WF CPH

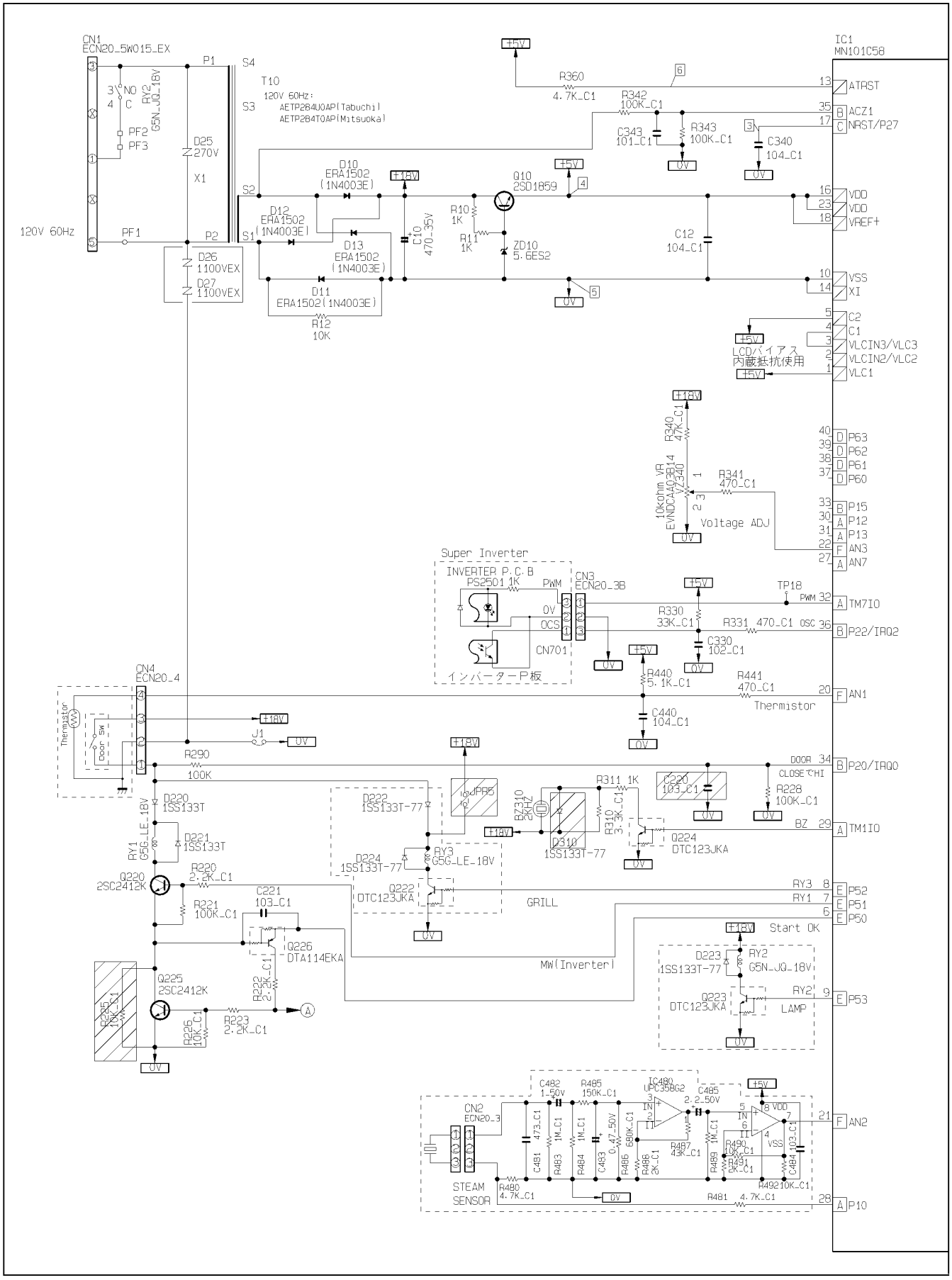
20 PACKING AND ACCESORIES

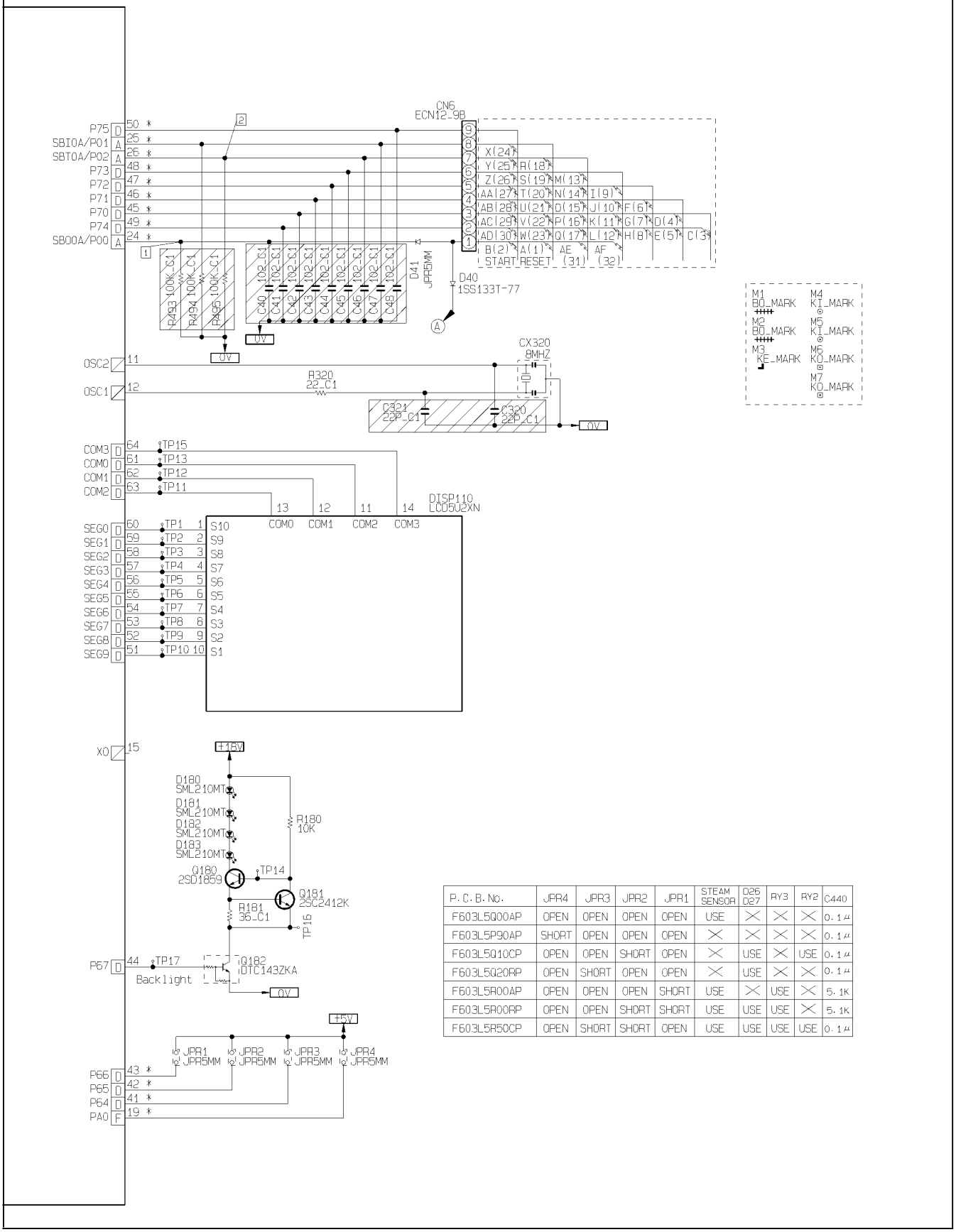


Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
P1		F00035R00AP	INSTRUCTION MANUAL	1	G463MF/WF APH
P1		F00035Q00AP	INSTRUCTION MANUAL	1	S443BF/WF APH
P1		F00035P90AP	INSTRUCTION MANUAL	1	S423BF/WF APH
P1		F00035R50CP	INSTRUCTION MANUAL	1	G463WF CPH
P1		F00035Q10CP	INSTRUCTION MANUAL	1	S413MF/WF CPH
P1		F00035R00RP	INSTRUCTION MANUAL	1	G463MF/MM RPH
P1		F00035Q20RP	INSTRUCTION MANUAL	1	413WF RPH
P2		F01025R00SAP	PACKING CASE, PAPER	1	G463MF APH, G463MF RPH
P2		F01025R00HAP	PACKING CASE, PAPER	1	G463WF APH
P2		F01025Q00BAP	PACKING CASE, PAPER	1	S443BF APH
P2		F01025Q00HAP	PACKING CASE, PAPER	1	S443WF APH
P2		F01025P90BAP	PACKING CASE, PAPER	1	S423BF APH
P2		F01025P90HAP	PACKING CASE, PAPER	1	S423WF APH
P2		F01025R50HCP	PACKING CASE, PAPER	1	G463WF CPH
P2		F01025Q10SCP	PACKING CASE, PAPER	1	S413MF CPH
P2		F01025Q10HCP	PACKING CASE, PAPER	1	S413WF CPH
P2		F01025Q20HRP	PACKING CASE, PAPER	1	413WF RPH
P3		F01045Q00AP	UPPER FILLER	1	
P4		F01055Q00AP	LOWER FILLER	1	
P5		F01068100XN	P.E.BAG	1	
P6		F01078100XN	DOOR SHEET	1	
P7		F06015Q00AP	COOKING TRAY	1	
P8		F01924T00AP	SHEET	1	G463MF/MM, S***MF, S***BF
P9		F01085R00BP	RACK PACKING	1	G463 APH/CPH/RPH
P11		F10855R00AP	BROWN DISH HANDLE	1	G463 APH/CPH/RPH
P12		F060V5U00XN	OVEN RACK	1	G463 APH/CPH/RPH
P13		F46065R00AP	BROWN DISH	1	G463 APH/CPH/RPH
P14		F00065G40AP	CAUTION LABEL	1	
P15		F01135R00AP	BROWN DISH FOAM	1	G463 APH/CPH/RPH

21 DIGITAL PROGRAMMER CIRCUIT

SCHEMATIC DIAGRAM





P.C.B.No.	JPR4	JPR3	JPR2	JPR1	STEAM SENSOR	D26 D27	RY3	RY2	C440
F603L5Q00AP	OPEN	OPEN	OPEN	OPEN	USE	×	×	×	0.1μ
F603L5P90AP	SHORT	OPEN	OPEN	OPEN	×	×	×	×	0.1μ
F603L5Q10CP	OPEN	OPEN	SHORT	OPEN	×	USE	×	USE	0.1μ
F603L5Q20RP	OPEN	SHORT	OPEN	OPEN	×	USE	×	×	0.1μ
F603L5R00AP	OPEN	OPEN	OPEN	SHORT	USE	×	USE	×	5.1K
F603L5R00RP	OPEN	OPEN	SHORT	SHORT	USE	USE	USE	×	5.1K
F603L5R50CP	OPEN	SHORT	SHORT	OPEN	USE	USE	USE	USE	0.1μ

22 DIGITAL PROGRAMMER CIRCUIT

PARTS LIST

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ310		AEFBAT2001	BUZZER	1	2.0KHz
C221		AECUU06F103Z	CHIP CAPACITOR	1	0.01µF/50V
C484		AECUU06F103Z	CHIP CAPACITOR	1	0.01µF/50V (G463 APH/CPH/RPH, S443BF/WF APH)
C343		AECUU06C101J	CHIP CAPACITOR	1	100PF/50V
C12, C340, C440		AECUT06F104Z	CHIP CAPACITOR	3	0.1µF/25V
C330		AECUU06R102K	CHIP CAPACITOR	1	1000PF/50V
C481		AECUU06F473Z	CHIP CAPACITOR	1	0.047µF/50V (G463 APH/CPH/RPH, S443BF/WF APH)
C10		AECETK1V471B	AL CHEM CAPACITOR	1	470µF/35V
C482		AECERS1H010B	AL CHEM CAPACITOR	1	1µF/50V (G463 APH/CPH/RPH, S443BF/WF APH)
C483		AECETS1HR47B	AL CHEM CAPACITOR	1	0.47µF/50V (G463 APH/CPH/RPH, S443BF/WF APH)
C485		AECETS1H2R2B	AL CHEM CAPACITOR	1	2.2µF/50V (G463 APH/CPH/RPH, S443BF/WF APH)
CN1		AEEMXH01505W	CONNECTOR	1	5 Pin
CN2		AEEMMF00703W	CONNECTOR	1	3 Pin (G463 APH/CPH/RPH, S443BF/WF APH)
CN3		F03524U00AP	CONNECTOR	1	3 Pin
CN4		AEEMXH00704W	CONNECTOR	1	4 Pin
CN6		AEEM09FDZBTM	CONNECTOR	1	9 Pin
CX320		AEFOS800MG06	CERAMIC RESONATOR	1	8.0MHz
DISP1		AEDDHJ5U20XN	LCD	1	
DISP1 HOLDER		F66174U20AP	LCD HOLDER	1	
D10-D13		AESSRCT1A6-E	DIODE	4	
D40, D220, D221, D223		AESS133T-77	DIODE	4	
D222, D224		AESS133T-77	DIODE	2	(G463 APH/CPH/RPH)
D25		AERZ271KD10A	VARSITOR	1	
D26, D27		AERZ102KD10A	VARSITOR	2	CPH, RPH
D180-D183		AESQPY1112H	CHIP-LED	4	
IC1		MN101C58AEK	L.S.I	1	
IC480		AEICUPC358G2	IC	1	(G463 APH/CPH/RPH, S443BF/WF APH)
Q226		AESA14EKE	CHIP DIGI-TRANSISTOR	1	
Q182, Q223, Q224		AESC23JKE	CHIP DIGI-TRANSISTOR	3	
Q222		AESC23JKE	CHIP DIGI-TRANSISTOR	1	(G463 APH/CPH/RPH)
Q10, Q180		2SD1859TV2Q	TRANSISTOR	2	
Q181, Q220, Q225		2SC2412KT146	CHIP TRANSISTOR	3	
R226		AERJ06J103R	CHIP RESISTOR	1	10K, 1/16W, 5%
R490, R492		AERJ06J103R	CHIP RESISTOR	2	10K, 1/16W, 5% (G463 APH/CPH/RPH, S443BF/WF APH)
R221, R228, R342, R343		AERJ06J104R	CHIP RESISTOR	4	100K, 1/16W, 5%
R483, R484, R489		AERJ06J105R	CHIP RESISTOR	3	1M, 1/16W, 5% (G463 APH/CPH/RPH, S443BF/WF APH)
R485		AERJ06J154R	CHIP RESISTOR	1	150K, 1/16W, 5% (G463 APH/CPH/RPH, S443BF/WF APH)
R488, R491		AERJ06J202R	CHIP RESISTOR	2	2K, 1/16W, 5% (G463 APH/CPH/RPH, S443BF/WF APH)
R320		AERJ06J220R	CHIP RESISTOR	1	22Ω, 1/16W, 5%
R181		AERJ06J360R	CHIP RESISTOR	1	36Ω, 1/16W, 5%
R220, R222, R223		AERJ06J222R	CHIP RESISTOR	3	2.2K, 1/16W, 5%
R310		AERJ06J332R	CHIP RESISTOR	1	3.3K, 1/16W, 5%
R330		AERJ06J333R	CHIP RESISTOR	1	33K, 1/16W, 5%
R487		AERJ06J433R	CHIP RESISTOR	1	43K, 1/16W, 5% (G463 APH/CPH/RPH, S443BF/WF APH)
R331, R341, R441		AERJ06J471R	CHIP RESISTOR	3	470Ω, 1/16W, 5%
R360		AERJ06J472R	CHIP RESISTOR	1	4.7K, 1/16W, 5%
R480, R481		AERJ06J472R	CHIP RESISTOR	2	4.7K, 1/16W, 5% (G463 APH/CPH/RPH, S443BF/WF APH)
R340		AERJ06J473R	CHIP RESISTOR	1	47K, 1/16W, 5%
R440		AERJ06J512R	CHIP RESISTOR	1	5.1K, 1/16W, 5%
R486		AERJ06J684R	CHIP RESISTOR	1	680K, 1/16W, 5% (G463 APH/CPH/RPH, S443BF/WF APH)
R10, R11, R311		AERDS2TJ102T	CARBON RESISTOR	3	1K, 1/4W, 5%
R12, R180		AERDS2TJ103T	CARBON RESISTOR	2	10K, 1/4W, 5%
R290		AERDS2TJ104T	CARBON RESISTOR	1	100K, 1/4W, 5%
VZ340		AEVNNV6TL103	VARISTOR	1	10KΩ
RY1		AEGG5G1A18	POWER RELAY	1	
RY3		AEGG5G1A18	POWER RELAY	1	(G463 APH/CPH/RPH, S443BF/WF APH)
RY2		AEBJQ1A18	POWER RELAY	1	
T10		AETP284U0AP	LOW VOLTAGE TRANSFORMER	1	
ZD10		AESZMTZJ5R6B	ZENER DIODE	1	

03/03
S-5M7
S-5M8
S-5M9
Printed in China